

THE THOMIST

A SPECULATIVE QUARTERLY REVIEW

EDITED BY THE DOMINICAN FATHERS

VOLUME
XVII

1954

THE THOMIST PRESS

WASHINGTON 17, D. C.

Publishers

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New York

1968

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Province of St. Joseph

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PRINTED IN THE UNITED STATES OF AMERICA

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EDITORS: THE DOMINICAN FATHERS OF THE PROVINCE OF ST. JOSEPH

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VOL. XVII

JANUARY, 1954

No. 1

THE INCARNATION:

DE LA TAILLE VS. THOMISTIC TRADITION



MORE than twenty-five years have elapsed since Père Maurice de la Taille publicly proposed his fascinating theory on "Created Actuation by Uncreated Act." That teaching met a mixed reaction, but de la Taille's restatement and published defense of it lent it great vigor. The intervening years have seen the influence of this very attractive doctrine increase rather steadily; others having accepted his teaching, applied it in yet further fields, and have judged it most fruitful.

One cannot read de la Taille's own exposition of his position without acquiring the conviction that the teacher himself lends acceptability to the teaching. Three qualities mark his work: true profundity, flavored with originality; wide theological

learning; and ease of presentation. These, the qualities of a great teacher, one reverences in de la Taille.

Yet a new evaluation of his contribution to theology on this point would seem opportune now. On the one hand, that contribution is well understood, its meaning is clear; on the other hand, all danger of seeming to discuss a *man* is over. Today, some ten years after his death, it is possible calmly to evaluate the doctrine with no implication of judging its author. We propose such a reappraisal in these pages. We shall attempt three things: 1) a very brief resumé of the teaching on created actuation by Uncreated Act with its application to the light of glory, sanctifying grace and the Hypostatic Union; 2) an appraisal of that doctrine; 3) an indication of its general relevance to Thomistic tradition. This last step is rather necessitated by de la Taille's assurance—even insistence—that his teaching is traditional Thomism.

In brief we hope to establish from this short study that 1) this doctrine of de la Taille denies by implication the distinction between the supernatural and the natural orders; 2) it rests upon a confusion between being and becoming, between formal and efficient causality; and 3) it is therefore inherently unacceptable, and certainly un-Thomistic.

We proceed at once, then, to the short resumé of de la Taille's teaching, preserving so far as is reasonably possible his own words.¹

¹ De la Taille's presentation and defense of this theory on created actuation by Uncreated Act is contained in three articles. The first entitled "The Schoolmen," given in English as a paper at the 1925 Summer School of Catholic Studies, the University of Cambridge, was published as part of the book, *The Incarnation*, edited by Rev. C. Lattey, S. J. (Cambridge: W. Heffer & Sons, 1926). The second article entitled "Actuation créé par Acte increé," etc. appeared in *Recherches de Science Religieuse*, XVIII (1928), 253-268. The third entitled "Entretien amical d'Eudoxe et de Palamède sur la grâce d'union," was published in *Revue Apologétique*, XLV, III (1929), 5-26, 129-145. All three papers, the latter two translated into English by Rev. Cyril Vollert, S. J., are now available in a single brochure, *The Hypostatic Union and Created Actuation by Uncreated Act*, published at West Baden College, West Baden Springs, Indiana. A most sympathetic discussion of de la Taille's theory is the article by Rev. Malachi J. Donnelly, S. J., "The Theory of R. P. Maurice de la Taille, S. J. on the Hypostatic Union," in *Theological Studies*, II (1941), 510-526.

I. CREATED ACTUATION BY UNCREATED ACT: AN EXPOSITION OF DE LA TAILLE'S TEACHING.²

1. In General.³

Actuation does not necessarily imply information. *Act* is the factor in a being which makes it a being of such or such perfection; *actuation* is the communication of the act to the potency, or correlatively, a reception of that act in the potency. It is a self-donation, a union. Actuation is called *information* if the act is dependent on the potency; if between act and potency there is mutual causality, mutual dependence.

Actuation which is not information is conceivable. If Infinite Act—God—ever unites Itself to a created potency there cannot be information involved, for no creature can cause the Uncaused God. There will be actuation of the created potency, but no information, no formal-material causality properly so called. There will be a perfecting of the potency by Pure Act: a change which is real, but which is neither the changeless Pure Act nor the potency changed by the new reality, but a created adaptation of the potency to Pure Act, an actuation of the potency by Pure Act.

In three cases created actuation by Uncreated Act is realized; for in three instances Pure Act does unite itself to created potencies, namely, to the created intellect in the Beatific Vision; to the essence of the soul in justification; to the humanity of Christ in the Incarnation. Consequently three created actuations by Uncreated Act are discernible: the *lumen gloriæ*; habitual grace; Christ's grace of union.

² This exposition is taken chiefly from the second article by de la Taille mentioned above. The third article, largely concerned with Thomistic tradition on the point under discussion, we shall use more extensively when we come to that point. The first article is considered in a separate, brief Epilogue. For purposes of convenience the references to de la Taille which we shall give will be to the brochure mentioned above. Two reasons suggest this: first, the brochure offers a uniform and most welcome translation; secondly, it is more readily available to American readers. Hereafter we shall refer to it simply as *The Hypostatic Union*.

³ De la Taille, *The Hypostatic Union*, pp. 29-30.

2. In Particular.⁴A) The *Lumen Gloriae*

Between God and the intelligence there will be a union which is that of act with potency; for the intelligible is the act of the one understanding. In order that the created mind be united with God there must be a created adaptation of that intelligence to Uncreated Act; an immediate disposition for it, introduced by the Act. This adaptation will be the reception of the Act in the potency, an association of the potency with the Act. It is consequent to the Act, but antecedent to the vital action which constitutes the vision. This is an actuation which is not information by Pure Act; but it is a created actuation which informs its subject (the created intellect) and which is dependent on that subject as on its material cause. Clearly it is in the order of accident, not of substance; and clearly it is supernatural. It is the union of the created mind with God as He is in Himself.

B) Habitual Grace.⁵

The human soul, even in this life, is in potency to an accession of divine life through an uncreated vital principle. This principle—God—cannot possibly *inform* souls; but communicating Himself to them He equips them for the new life.

This new life consists properly in charity; but charity, as friendship, supposes a certain community of life. Hence the need for a oneness of life underlying even charity, a oneness whereby the very essence of the soul will be united to the divine essence, associated with divine life, recipient of the divine nature. This union is habitual, or sanctifying grace. The Act which is divine life—God—comes “to actuate the receptive capacity of the soul in order that the corresponding actuation may arise in the soul.”

Thus this actuation, or grace, is a created communication of the Spirit of life. It is a quality which informs its subject; it is a change in that subject, the potency's possession of the

⁴ *Ibid.*, pp. 30-32.⁵ *Ibid.*, pp. 32-34.

Act, which entails the indwelling of God within us. It is a true habit, a permanent accident; it, again, is obviously supernatural.

C) Christ's Grace of Union.⁶

In Christ alone is realized *substantial* created actuation by Uncreated Act. For Christ is one, not in nature, but in the community of substantial existence among the composing factors in Him. The humanity receives "a communication of the act of divine existence as this Act is personal to the Word." Again this is created actuation by Uncreated Act, this time of the substantial order.

This substantial actuation is precisely Christ's grace of union; a created grace, a substantial conformation of Christ's humanity to the Word, yet not a substance, nor part thereof, even as the substantial existence of creatures is not part of their substance though it actuates that substance, substantially.

The human nature could not be the material cause of the Word, but it *is* the material cause of the grace of union. The Word is as perfective (but not as informing) act because He alone is the term of the union. Since the created potency can be only obediential with respect to this Act,—the Word—a proportion between the potency and the act must be established; a substantial adaption which is, of course, the created actuation.

The created actuation in question does not merge with Christ's humanity: were the latter outside the theandric composite it would exist without such actuation. This actuation is not merely supernatural as are the *lumen gloriæ* and habitual grace; the actuation proper to Christ is at the very summit of the supernatural.

Here Père de la Taille pauses to illustrate. He notes that whenever an act of created existence is the actuation of its substance no room is left for distinction between existence by way of act, and existence by way of actuation. But—and this, he adds, helps to illustrate created actuation in the Incarnation

⁶ *Ibid.*, pp. 34-41.

—whenever the act of existence is independent, as regards its duration, of the subject to which it is compared, then act and actuation are distinct. Thus the act of existence proper to the soul is the (existential) actuation of the soul, but it is not the actuation of the body united to the soul. The *act* of existence in man is one; yet it is proper to the soul and not to the body, because the soul retains it when the body does not. Thus there is in the body united to the soul a) the specific information of the body by the essence of the soul, and b) a communication to the body of that existence by which the soul exists. This latter is other than the existence communicated; for the act of existence survives when the communication to the body ceases. The actuation of the body is perishable, corporeal; the soul's existence is incorruptible and immaterial.

Similarly in Christ. The actuation of His humanity by the Act (i. e. by the *esse* of the Word) occurs in time; the Act is eternal. In Christ, then, we must say, adds de la Taille, that there is but one existence if it is a question of the Act by which the natures exist; but equally truly one must say that there are in Him two existences, if it is a question of the actuations. The actuation of the human nature is created, temporal; the actuation of the Word—Who is the Act—is uncreated, eternal. Community in the act of existence between the diverse natures necessarily supposes in one of them an actuation quite different from that which is found in the other.

II. CREATED ACTUATION BY UNCREATED ACT: A CRITICISM OF DE LA TAILLE'S TEACHING.

I have suggested above that two difficulties are basic to the whole theory proposed by Père de la Taille. I shall attempt to establish this by examining each of the three applications of the theory, but I shall reverse the order he followed, considering his doctrine *first*, on the Hypostatic Union; *secondly*, on habitual grace; *thirdly*, on the *lumen gloriae*. There are two reasons for this. The first is that de la Taille himself considered as principal his teaching on the grace of union; it would seem

to have been largely for the sake of illustrating this that he applied the teaching of created actuation by Uncreated Act to the *lumen gloriae* and to habitual grace. Critical attention, therefore, properly centers on the teaching about the grace of union. The second reason, directly related to the first, is that the basic difficulties of the theory seem easier to analyze in its application to the grace of union.

A. The Hypostatic Union.

The grace of union in Christ is, for de la Taille, a substantial created actuation by Uncreated Act; the created communication to Christ's humanity of the Uncreated Act of the Word's existence. This, as we saw, he illustrated by analogy with the one act of existence in man. This act of human existence is common to body and soul as the Word's existence is common to Christ's divine and human nature; yet its actuation of the body, since corruptible, is different from its incorruptible actuation of the soul; as the Word's actuation, in time, of Christ's humanity is different from Its eternal formality as Act identical with the Divine Nature.

The reader of de la Taille is sure to find this analogy of soul to Word rather striking. It can seem a wonderful illustration in the natural order of what de la Taille teaches about the supernatural order. It will be profitable, therefore, to consider briefly the implications of this comparison, bearing in mind, of course, that it is a mere example, but bearing in mind, too, that misconceptions in the example can shed light on misconceptions in the doctrine exemplified. First we shall consider the example, then the doctrine it illustrates, i. e. the Hypostatic Union.

The judgment that in the human composite the *act* of existence is not the (existential) actuation of the body; the judgment that the communication from soul to body is some reality other than the existence communicated—this is the whole point of the example. Yet this precisely must be questioned. First, it seems squarely opposed to Saint Thomas on whom de la Taille claims always to base his teachings. Several times Saint Thomas discusses this very matter of the one existence of the spiritual soul and the material body. He writes, for example,

In order that anything be the substantial form of matter two things are required. One is that the form be, in a substantial way, the principle of being to that of which it is the form; I do not mean an efficient, but a formal principle by which something is and is called *ens*. Whence follows the second requisite: namely, that form and matter have (convene in) one existence. . . . The fact that an intellectual substance is subsistent does not prevent its being the formal principle of being of matter, as communicating *its* existence to matter. For it is not unfitting that a composite and its very form subsist in the *same* existence since the composite is only through the form. . . .⁷

Again in the opusculum *De Spiritualibus Creaturis* St. Thomas wrote: " (The soul) receives the body to a communication of *this* existence; and thus *there is one existence of soul and body which is the existence of the man*. For if the body were united to it (the soul) according to some other existence it would follow that the union would be accidental."⁸ In the same article St. Thomas teaches that the soul can communicate its *own* existence to the human body; that it draws the body to its existence; that the soul, *though incorruptible*, is not in any genus or species, is not a person or hypostasis: all this is proper to the *composite*. The reason? In St. Thomas it is most evident and explicit—the soul is but a part of human nature and "has the perfection of its nature only in union with the body."⁹ The existential actuation of the body is the identical (existential) actuation of the soul: for there is, as St. Thomas repeatedly teaches, but *one* human reality potential to existence, viz., the composite. It has but *one* actuation, viz., its act of existence. This has always been the understanding of the Thomists, and as a matter of fact St. Thomas would be unintelligible if de la Taille's account were correct; for St. Thomas in principle answered de la Taille's position long before it was formulated. He refers to the objection that "an intellectual substance cannot communicate its being (exist-

⁷ *II Cont. Gent.*, c. 68.

⁸ *De Spiritualibus Creaturis*, a. 2, ad 3.

⁹ *Ibid.*, ad 5; cf. *Summa Theol.*, I, q. 75, a. 4; a. 2, ad 1.

ence) to corporeal matter so that the existence of that intellectual substance and of the corporeal matter be one; for diverse genera (of things) have diverse modes of existing, and more noble substances, more noble existence.”¹⁰ This ancient difficulty is roughly de la Taille’s position: since the body is corruptible its existential actuation must similarly be corruptible and temporal. But St. Thomas answered the difficulty. This identical existential actuation is the existence “of the corporeal matter as of a recipient and of a subject raised to something higher; but of the intellectual substance as of a principle.” If de la Taille is correct, if the existential actuation communicated to the body is like the body, corporeal, corruptible, temporal, how can the body be said to have been raised through that communication to something higher? Rather, as de la Taille demands, its existence would be exactly like it, corporeal, transitory, etc.

Thus St. Thomas (and his Commentators) insist on the total unity of the existence of a composite, expressly including the human composite. So we read:

beyond doubt the (human) soul has in itself perfect being (existence): nor through its conjunction to the body is there made any other existence; that very being which is *per se* the soul’s is made the existence of the composite: for *the existence of a composite is only the existence of its form*. . . . The composition which affects a soul after, according to our way of understanding, its *esse completum* does not make another existence *because without doubt that would be accidental*.¹¹

If de la Taille insists, then, on postulating an existential communication to the body which communication is distinct from the soul communicating, let him admit its nature as accidental: and so deny the substantiality of man as such. It is the constant teaching of Thomism that there is a single existence, in *every* sense one, of any composite including man: though this existence is received by matter *through* the form: and the form is that “*quo totum est*.”¹²

¹⁰ *II Cont. Gent.*, *loc. cit.*

¹¹ *I Sent.*, d. 8, q. 5, a. 2, ad 2 et ad 3.

¹² *II Cont. Gent.*, c. 54; cf. John of St. Thomas, *Cursus Philosophicus*, II, pp. 60, 144-146, 379, etc. (Reiser edition).

Note how deep is the cleavage. St. Thomas teaches that the soul communicates its own existence to the body, though that existence is not dependent on the body; the new teaching is that it does not for "the communication to the body will be something other than the existence communicated." According to St. Thomas the body is as it were elevated by its existence; according to de la Taille the communication from soul to body is no nobler than the body. For St. Thomas the *suppositum* is that which properly exists; for de la Taille the act of human existence is proper to the soul.

Perhaps there is no more profound explanation of the unity of soul and body in one incorruptible existential actuation than the Commentary of Ferrariensis on *II Contra Gentiles*, c. 68. That commentary, a mere exposition of St. Thomas' thought, is in strong contradiction to the new doctrine, for it insists on one act (or actuation) of the composite as such; and on the incorruptibility of that single act or actuation; for any other actuation would, necessarily, be accidental.

But not only does de la Taille in this oppose St. Thomas: he tends, too, to a denial of that real distinction between created essence and existence, which distinction he explicitly affirms.

He ascribes, for example, to existence functions which are proper to the essential order alone. So from existential act of the soul united to body as to potency there results a new reality, viz. the actuation of the body which by de la Taille's own description is identical not with the act of existence, and not with the body but which is, nevertheless, of the substantial order. It is a *quid novum*, it is a third thing somewhat as in the essential order the union of matter and form results in the composite which though substantial is yet identical with neither matter nor form. Thus from de la Taille's failure, in his general metaphysics, to distinguish sharply between act and potency there follows the ascribing to existence of the proper function of essential principles, viz. to compose a substantial composite.

Note, incidentally, how the wedding of potency and act involves the divorce of matter and form. For de la Taille the substantial principles of essence do not make *one* essential reality, actuated by one actuation. Potency (body) has its existential actuation quite distinct as actuation from that of the soul (act); the two actuations differ as the temporal from the aeviternal, the perishable from the incorruptible, the corporeal from the spiritual. He holds against St. Thomas not one nature, as potency to one existential actuation; but rather two realities having different natures and predicates with correspondingly different "actuations." The unity of man disappears, though this de la Taille would hardly admit. Such a consequence is inevitable. When the distinction between act and potency, between created essence and existence is obscured, then the nature of created being escapes us in the shadows; and with it all hope of accounting for that unity which is really identical with that being.

From the example—the act of existence in its relation to the soul and to the body—we pass to a consideration of the thing exemplified, viz. the existence of the Divine Word in relation to the two natures of Christ. For the sake of continuity we shall begin by applying here the criticism of the example, namely, that de la Taille tends to a confusion of essence and existence. To this, we shall add further, only a criticism of his concept of the distinction between the natural and the supernatural orders.

For de la Taille, somewhat as the one act of human existence communicates to the body an actuation different from itself, so the Word communicates to the human nature of Christ the created grace of union—an existential actuation, a created reality which as informing the created nature is distinct from that nature; and which as created is distinct from the uncreated existence. This created actuation de la Taille variously describes as a certain *amelioration* of that nature; its *tractio* to the substantial Word of God; a *passio* in the creature which *passio* is the foundation of the created relation which is the union itself. This *tractio* or *passio* Saint Thomas and theo-

logical tradition call the *assumption* of the human nature.¹³ For de la Taille it is a created reality distinct from the extremes united and from the relation of union between them: it is the union *fundamentally*.

At very least it can be said that this position is foreign to Thomistic tradition. This de la Taille admits, or rather complains of,¹⁴ though he does, curiously, work hard to show that some Thomists have held a theory somewhat similar to his own—and relies heavily for this on Billuart. Yet Thomists in fact agree with this same Billuart who says (in a passage found in the very place de la Taille cites, but not included in the citation) “*exercitium terminandi (humanam naturam) non est aliquid creatum.*”¹⁵ Traditionally Thomists have spoken of an *assumption* of the human nature, sometimes of a *tractio* of that nature to the Word: but they have never understood it to be a created reality other than the relation of union. Now how can Thomists admit an *assumption*, or a *tractio* and not imply the *passio* de la Taille describes as a created reality actuating the human nature? Here two points are to be considered: first, that even considering the efficient causality exercised by God in uniting Christ’s human nature to the Word any true *passio* or *mutatio* of that human nature is impossible; and second, that, in particular, the *Verbum* as terminating or personalizing that human nature could not possibly cause in it the *passio* or *mutatio* described by de la Taille.

As to the first point, Thomists conceive the uniting of Christ’s humanity to the Word to be without any true *passio* in that humanity. Why? Because they understand the profound truth so simply enunciated by St. Thomas: *subtracto motu ab actione et passione, non remanet nisi relatio*.¹⁶ Now in the

¹³ St. Thomas, *Summa Theol.*, III, q. 3.

¹⁴ *Ibid.*, pp. 57-58.

¹⁵ Billuart, *Summa Sancti Thomae*, t. V, *Tractus de Incarnatione*, diss. IV, art. 3 (p. 418).

¹⁶ *Summa Theol.*, I, q. 28, a. 3, ad 1; q. 41, a. 1, ad 2; q. 45, a. 2, ad 2; a. 3; *III Physic.*, lect. 5, nn. 7-9; *de Pot.*, q. 3, a. 3. The latter two places particularly make evident the necessity and rich meaning of this axiom.

uniting of Christ's humanity to the *esse* of the Word any true motion is impossible. Motion, "the act of the being in potency precisely inasmuch as it is in potency," presupposes an existent subject and names in that subject its transition to new actuality. But Christ's humanity did not preexist to its union with the *Verbum*—to this we must all agree. Consequently there can be no motion presupposed to that union; and where there is no motion there can only be, again in St. Thomas' words, "*relatio quaedam cum novitate essendi*."¹⁷ Hence in the Incarnation we must admit the extremes joined and in addition the created relation of union inhering in the created human nature of Christ—but no more. Analogously in creation we admit the thing created together with its real relation to the Creator: but, because motion is not involved in creating we admit no more, i. e. no *passio*, no *mutatio* but only *relatio quaedam cum novitate essendi*.¹⁸ Thus by confusedly introducing into the Hypostatic Union concepts which have verification only in most imperfect changes, Père de la Taille implicitly renders that union less ineffable, less dignified.

But the great theologian fell victim to an even more subtle confusion in this matter. Note what is radically involved in his position that the *Verbum*, terminating, personalizing the human nature of Christ produces in it a certain *passio* or *mutatio* which is the created actuation of that humanity. In what order of causality is *passio* to be found? It is a reality, properly speaking, only in the order of efficient causality; it corresponds, in a recipient, to the *actio* of an *agent*. Thus it can be and, in natural changes, is precedent to the inter-play of material-formal causality between a subject and its new form, because the agent through its efficient action induces that form in the matter.

Passio, however, cannot, properly, be an element in the inter-play of formal-material causality, or of quasi-formal and quasi-material causality. Matter is informed by its form; we do not say *materia patitur a forma*. Neither *passio* nor *mutatio* can

¹⁷ *De Pot.*, loc. cit.

¹⁸ *Summa Theol.*, q. 45, a. 3.

be as a quasi-formal effect. Yet Père de la Taille conceived and described *passio* and *mutatio* as the quasi-formal effect of the *Verbum* in the human nature of Christ. Thus one real defect in this application of the theory of created actuation by Uncreated Act—a defect which we shall, analogously, discover in all applications of the theory—is positing as a quasi-formal effect of Uncreated Act that which pertains to the efficient order and not to the formal or quasi-formal order at all. There is here a confusion between change (the *actio-passio* exchange) which is a becoming, and its term, a being. *Passio* is not a quasi-formal effect because becoming is not being; because imperfection is not perfection, because the conditions of potency are not the conditions of act.

In metaphysical terms we can say that there is involved here a confusion between potency and act. A quasi-formal effect is a thing, a being, an act or actuation; *passio* and *mutatio* pertain to motion which inherently regards, by definition, potency.

One further point demands to be made. On de la Taille's own principles his teaching on the created actuation by the Word of Christ's human nature is inadequate. If the actuation of the body by the soul is, in men generally, different from the existence of the soul as this theory holds, then the (existential) actuation of Christ's body is a different reality from the actuation of His soul. Thus we should find in Christ, on de la Taille's premises, three actuations rather than the two on which de la Taille insists—and, of course, no *one* substantial actuation of His humanity. If this theory be true, what of the existence of the body of Christ during its time of substantial separation from His soul? Given the reality of the death of the Lord His soul could hardly have produced a *passio* in His body during those days; for *passio*, the correlative of *actio* presupposes the union of agent and patient. Hence either the entombed body of Christ had no existential actuation at all, or it had that actuation from a source other than His soul. On the first supposition there would have been no sacred body to entomb—which is mere nonsense. On the second alternative the body,

actually existing by an existence unrelated to the existence of Christ's soul, would have had a *new* existence different at very least numerically from that of Christ's soul—thus that body would not have been the existent reality born of Mary, but numerically at least a new thing. There is but one escape, viz. to suppose that from the first moment of the Incarnation the Lord's body received its "actuation" immediately from the *Verbum* and not through His soul—and this is contrary to the law of nature succinctly expressed by St. Thomas *caro humana sortitur esse per animam*.¹⁹

In the natural order, then, de la Taille through an unfortunate confusion of the efficient and formal (or quasi-formal) orders misconceived the union of the human nature of Christ to the Word as implying a *passio* as a positive created reality. In fact true *passio* or *mutatio* is to be found in this union, neither in the efficient nor in the quasi-formal order. Positing such a *mutatio* springs from a confusion of all communication with motion; it leads to suppositions which are untenable.

Our second general point of criticism is this: Père de la Taille misconceived obediential potency and consequently denies, by implication, the real and vastly important distinction between the natural and the supernatural orders. For, note that the created actuation of Christ's human nature by the Word is supernatural, indeed it is "at the summit of the supernatural." Yet this eminently supernatural reality *informs the human nature of Christ*, according to de la Taille; conversely, the *human nature is its material cause* in the true meaning of material causality.

Now a cause is a principle whence something originates, or proceeds, with dependence in being. A material cause, in common with other true causes, actually contributes to the constitution and conservation of the effect. Thus, if de la Taille be correct, the human nature of Christ positively contri-

¹⁹ This difficulty in the theory of de la Taille is peculiar to that theory, for its demand of a *passio* in the potency as actuated requires a physical conjunction between act and potency. Without such conjunction a true *passio* is quite impossible.

butes by its natural powers to the being of a substantial, supernatural entity. But John of St. Thomas writes that the opinion of some

that an obediential potency is inchoatively supernatural is false, if it be understood that it is intrinsically and positively supernatural; for thus something would be of the supernatural order naturally and intrinsically. But this (opinion) is true if understood negatively, or denominatively from some supernatural extrinsic agent. But this is to be obediential through non-repugnance with respect to a superior power. . . . In order that something be moved by a supernatural agent it should not have a positive proportion to it but rather it ought to be far from it and deficient, as of a different order, and so it cannot be positively coordinated with that (superior agent) but only negatively or by non-repugnance; and this is a potency's being obediential.²⁰

But in speaking of formal and material causality the same authority writes: "Intrinsic proportion, so that matter and form be of the same order, pertains not to a mere condition but to the intrinsic *ratio* of these causes, because the *ratio* of causing is that by which the cause is proportioned to the thing caused."²¹

Essentially the same account of obediential potency as distinct from true material causality is given by the Salmanticenses describing obediential potency on an order "of pure capability . . . not of any sort whatsoever but such that of itself it does not have proximate efficacy for attaining them (i. e. supernatural realities) nor is it due it that it attain them."²² And Garrigou-Lagrange in our own day writes: "the obediential potency in a creature relative to God is not an active faculty, but a passive aptitude, indeed this aptitude is nothing other than mere non-repugnance."²³ In St. Thomas' own phase: "supernatural principles suppose nothing positive in man."²⁴

The point of difficulty is clear. Material causality involves an intrinsic, positive proportion between the material cause

²⁰ *Cursus Philosophicus*, II, pp. 94, 95.

²¹ *Ibid.*, p. 237.

²² Salmanticenses, I, pp. 97-98.

²³ *De Revelatione*, I, p. 353.

²⁴ *II Sent.*, d. 32, q. 2, a. 1.

and its formal complement. The material cause is subjective potency with regard to that form. Obediential potency on the contrary involves no such positive proportion between it and the form; there is only that objective capacity which is mere non-impossibility, non-repugnance.

How, then, does a Thomist conceive the function of an obediential potency? To be sure, that potency (or, ultimately its subject if the potency in question is not of the substantial order) is the subject *in which* the supernatural form is, but not a subject *out of which* it becomes, or is. Hence the substantial subject does have its existence, as it were, communicated to the supernatural form: but that subject in no sense contributes to the intrinsic constitution of the nature or essence of the form in question,²⁵ for it cannot. Could it do so there would be no disproportion between the two, hence no supernaturality on the part of the form. Carefully, then, the Thomist distinguishes between essence and existence, between the form's *esse tale* and *inesse*. By *divine* power the *esse tale* is constituted, constituted as resident in this existent: between the existent and the form there is not repugnance—but neither is there that procession of the latter from the positive potentiality of the former, which constitutes the exercise of material causality properly so-called.

How different the outlook of Père de la Taille! “The material causality of the human nature has no reference to anything in the theandric composite *except the grace of union*,”²⁶ which is “at the summit of the supernatural.” Once we admit proper material causality in a natural thing with respect to a supernatural form we have asserted proportion, and intrinsic correlation between the two orders.

It might seem that this criticism is weakened, if not destroyed, by the example of the human soul. The soul is *in* the body; the body is not that *out of which* the soul is educed.

²⁵ We are here, obviously, supposing that the supernatural form is of the accidental order. The special problem of a supernatural creature of the substantial order we shall consider soon.

²⁶ *The Hypostatic Union*, p. 35.

Yet the body is the true material cause of man. The same can be applied, analogously, in the supernatural order, one might argue.

The objection is merely superficial. Granted that the soul is, *in ratione substantialitatis*, complete, it is nevertheless, *in ratione speciei*, incomplete; of itself it does not constitute a complete nature but depends *intrinsically* and positively on the body as on its material cause and only together with that body does it constitute a human nature. Hence the body's material causality involves not only that the soul is *in* it as in a subject, but also that the effect—a man—is constituted *out of it* as out of one of its intrinsic causes. Even here material causality includes the procession of the proper effect out of the matter. Yet this latter is precisely what is impossible in the case of an obediential potency.

Therefore, Père de la Taille's position that Christ's human nature is the material cause of the supernatural grace of union involves a denial of the proposition that that human nature is merely an obediential potency with respect to a supernatural reality. Note that de la Taille himself never conceived this material causality, of which he writes, as mere non-repugnance. Writing of formal and material causality he says very clearly, "There is a reciprocity of good offices, an exchange of resources . . . there is mutual indebtedness and interdependence."²⁷ He himself creates the difficulty: the difficulty of a supernatural effect dependent for its being on the "good offices . . . the resources" of a merely natural thing.

It must be noted that a special difficulty is involved in de la Taille's teaching that the Word's "created actuation" of Christ's human nature is of the substantial order. Surely the good theologian, who so carefully cites Thomistic authorities, ought to have known the clear Thomistic tradition that a created, supernatural, substantial reality is impossible, intrinsically contradictory.²⁸ As Billuart argues (and his is but one

²⁷ *Ibid.*, p. 29.

²⁸ For "sample" views see Gonet, *Clypeus Theologiae Thomisticae*, t. V, Tractatus VIII (*de Gratia*), disp. II, a. 3; Billuart, *op. cit.*, t. I, diss. IV, a. 5; Garrigou-Lagrange, *De Deo Uno*, pp. 294-295.

voice in the long tradition: a voice which de la Taille echoes in other things)

Supernaturality consists in a transcendental order to God, as He is in Himself, and as elevated above all nature, as to the specificative object and the connatural end. . . . Therefore, a supernatural being is constituted essentially through an order to something extrinsic, namely to God as He transcends every creature. But it is impossible that there be given a created substance . . . which is essentially constituted by an order to something extrinsic because substance is above all complete, a being *in se et ad se* and so it has its constitutive within its own line (limits) in such fashion that it cannot seek its species from something extrinsic.²⁹

Among Thomists there is unanimity on the proposition that a supernatural, created reality of the substantial order is impossible. The clear words of Saint Thomas demand that unanimity. He writes that in defining substance "nothing extrinsic is included: every substance is defined in terms merely of its material and formal principles. . . . The reason is that a definition must express what a thing is . . . and substance is something complete in its being and kind." Thus if we suppose anything substantial, created, and supernatural, then the supernatural—which is above all creatures—enters in as an intrinsic constituent, as matter or form, of the creature. One and the same substantial principle is and is not above the created order.

Note again how deep is the cleavage. For de la Taille the "created actuation" of Christ's humanity is "absolute as a substantial actuation, and it is relative, essentially relative to the Word's personal existence." Yet St. Thomas expressly held that substance can be defined only in terms of intrinsic causes because substance "is something complete in its being and kind"—it is not then "essentially relative." Clearly de la Taille was quite free to imagine supernaturally relative substances if he so chose; but accuracy demands that he desist from claiming affinity,—and *a fortiori*—identity, with Thomism.

²⁹ Billuart, *loc. cit.*, par. 4.

³⁰ *II de Anima*, lect. 1. n. 213.

This same accuracy forces one to the observation that de la Taille's position is not merely contrary to Thomism—it is contrary as well to the distinction, basic in all Christian thought, between Creator and creature. (I do not imply that this tendency is original, among Christian thinkers, to de la Taille—very far from it. The tendency is basic to all Suarezianism, implicit in the very first proposition of Suarezian metaphysics). For what is “the supernatural” to which, according to de la Taille, the “created substantial actuation” postulated belongs? If “supernatural” signifies anything at all, as for Christians it must, it signifies that which is above created nature, and is proper to the Divine. “Those things are properly called natural which are caused by the principles of nature. But those things are supernatural which God reserves to Himself.”⁸¹

Thus the supernatural exceeds created nature, and is proper to the divine order: a created substance or principle does not exceed created nature, cannot do so if it is created. Thus a supernatural created substantial reality *as* supernatural would pertain to the divine: as created to the non-divine. Hence infinite distinction between the Divine Creator and limited creature would be annihilated—*there would be a medium*. In all restraint may we not say that de la Taille's supposition is not alone un-Thomistic; it is, in addition, self-contradictory, and perilous at least to one basic point of faith.

To all this one can object: the Sacred Humanity of Christ does in fact exist by something which is proper to God in His transcendence, viz. by the *esse* of the Divine Word. Hence His humanity is in fact related to something divinely transcendent. The answer is, that while Christ's humanity is related (by a relation which is an accident, not a substance) to the transcendent *esse* of the Word it is not related to a *created* supernatural, substantial act—that is the point. For such actuation as created would be, inherently, of finite degree or perfection; yet as supernatural, i.e. of the divine order, it

⁸¹ St. Thomas, *Suppl.*, q. 6, a. 1.

would be specifically of an infinite order of perfection. The substantial actuation which de la Taille proposes involves both: as supernatural it would be a specifically infinite substance; as created, specifically finite.

B. Sanctifying or Habitual Grace.

Next we consider de la Taille's exemplification in habitual grace of his doctrine or created actuation by Uncreated Act. These criticisms will be most brief; the criticism urged against his teaching on Christ's grace of union need only be applied here again.

Here, as in the teaching on Christ's grace of union, de la Taille, whatever his intention, does implicitly deny the distinction between the natural and the supernatural orders. He teaches that habitual grace is a created actuation produced in the human soul by God's own essence. This Act—God—comes that "actuation may arise in the soul"; habitual grace is a reality "informing its proper subject," an "actuation of the potency by the Act."³² There is involved then, on the side of the potency or the created nature, material causality in the true sense, with respect to a supernatural entity; the natural is a true cause of the supernatural, this time in the order of accidents. The deplorable and untraditional misconception inherent in this view has been indicated already. It implies, as we have seen, a positive proportion between the essence of the soul as a thing of nature, and the life of God as supernatural; it implies that the soul by its natural "resources" or its "good offices" positively contributes to the essential constitution of a supernatural reality; for, according to de la Taille himself, that is what a material cause does.

In the second place sanctifying grace is, according to the French theologian, "the change of the potency" (i. e. of the soul), its amelioration, and also "its union . . . with the subsistent Act." At one and the same time it is the change or *mutatio* and the formal modification.

³² *The Hypostatic Union*, pp. 33-34.

Here again is the confusion about motion. The fact is that the infusion of habitual grace is, as all admit, instantaneous: a man cannot be partially justified and partially not justified. The instant of justification can be and, in adults, normally is preceded by a change of moral dispositions which change is successive—yet the infusion of habitual grace is not successive. Hence it involves no motion. *Sublato motu ab actione et passione non remanet nisi relatio*. The infusion of grace, then, involves no real *passio* in the soul. In an instant there is life, divine life, present in the soul, yes; but there is no process, no *passio* whereby it becomes; and this precisely because grace is supernatural, so that the soul cannot cooperate as patient in its production. Grace can presuppose change (in dispositions); but it itself is not a change.

Père de la Taille, while admitting that habitual grace is a certain formal modification of the essence of the soul, nevertheless conceived and described it after the manner of an efficient modification. Quite apart from the truth that grace, as an instantaneous infusion, cannot involve change in the proper sense is the more profound truth that *no* formal modification is a change or *passio*. Change, and *passio* belong to the order of becoming; formal modification to the order of being whether substantial or accidental. Form is the act of *being as actual*; motion which is implied in passion is the act of *being as potential*. Being-in-potency is really distinct from being-in-act; and therefore change is really distinct from formal modification.

Especially to be noted in de la Taille's consideration of habitual grace is his teaching that grace is the quasi-formal effect of the Act—God—already united to the soul.

“This union of essence with essence is called sanctifying grace. It, too, in addition to the created gift that constitutes it, implies an uncreated Gift without which it would lapse into nothingness. The Act of divine life itself must come to actuate the receptive capacity of the soul *in order that the corresponding actuation may arise* in the soul.”³³ First God indwelling;

³³ *Op. cit.*, p. 33.

then grace as the communication from Him, as the created actuation which, as it were, spontaneously arises.

But this is an inversion. Traditional theology and most notably the Thomistic tradition teaches that God indwells through grace; grace is the *principle*, not truly the consequent of the indwelling; grace, that is, together with charity and the gifts of the Holy Ghost. Grace is not God present to the soul, as de la Taille teaches: rather it is the mediate cause through which that presence is achieved.

As nature principles faculties, grace principles the theological (and infused moral) virtues and the gifts: and it is in and through the operation of these latter that God's special presence to the just is realized. "Besides the common mode (according to which God is present to all things) there is a special mode which is proper to the rational creature, in whom God is said to be as the thing known in the knower, and the thing loved in the lover. Because by knowing and loving the rational creature attains . . . to God Himself according to this special mode God is said . . . to be in the rational creature."³⁴ John of St. Thomas especially has developed in detail Thomistic tradition on this point; but the tradition itself is clear. Grace is a true principle of the Indwelling.

Note de la Taille's source of confusion. The thing principled—the Indwelling—causes its own principle. The radical, subjective capability (grace) *is* the formal perfection. Capability and its perfection merge.

C. The *Lumen Gloriae*

Lastly in this section—and briefly—we consider de la Taille's teaching on "created actuation by Uncreated Act" in its application to the *lumen gloriae*. Here again we shall meet the two basic difficulties already twice encountered, together with a third proper to the Jesuit theologian's teaching on the *lumen*.

There is immediate evidence of de la Taille's breakdown of the distinction between the natural and the supernatural orders; for here, too, a mere creature is presented as being a

³⁴ *Summa Theol.*, I, q. 43, a. 3.

true and intrinsic cause of an effect which is properly supernatural. "This created actuation [the *lumen gloriae*] of the potency informs its subject: it is dependent on the latter as on its material cause."³⁵ The unacceptability and non-traditional character of this proposition we have, I think, treated quite sufficiently in considering its counterpart in de la Taille's teaching on the Incarnation and habitual grace. This third time a mere noting of the repetition suffices.

Secondly, there is most clearly involved here also the now familiar confusion between diverse orders of causality. "This disposition for both the Act and the operation [viz. of seeing God as He is] which at the same time is the change of the potency and the union of the potency with the Act—all this is in the light of glory."³⁶ And again de la Taille refers to the *lumen* as "an amelioration" of the potency. The *lumen*, then, is a certain change, amelioration, or *passio* in the intellect; and at the same time its formal modification.

The answer to this position is, roughly, already evident from what has been said above. First, the infusion of the *lumen gloriae* is instantaneous (because a man cannot both be seeing God as He is, and not seeing God as He is) and as such without any true *passio* or *mutatio*. Secondly, since the *lumen gloriae* is a certain formal modification of the created mind it could not in any true sense imply *mutatio* or *passio* for its subject. The *lumen* must be one or the other: either an efficient cause to whose action there corresponds *passio* in the subject; or a form in the mind: but since becoming is not being the *lumen* cannot be both.

One readily admits, of course, that theologians, St. Thomas included, speak of the *lumen* (as indeed they speak also of grace) as involving a change in the subject. But that is a manner of speaking to which we are bound by our poverty of vocabulary. Considering the efficient production of the *lumen* in the created intellect we must use the word *change* because we have no word which accurately describes instantaneous

³⁵ *The Hypostatic Union*, p. 32.

³⁶ *Ibid.*, loc. cit.

modification. But the central point is this: when the *lumen* is spoken of as involving a change it is not the *lumen as form* which is under discussion but the *production of the lumen*; that is, the Agent who produces the *lumen* changes (in a broad sense) or betters the intellect; but the *lumen* itself as form does not do so. It is just this latter point which Père de la Taille did not grasp in his confusion of the efficient and the formal orders.

Thirdly and lastly, under this point we note a confusion that is itself proper to de la Taille's analysis of the *lumen gloriæ*, though similar to a confusion found in his analysis of grace. He conceives the *lumen* as efficiently proceeding from the very presence to the mind of the beatifying object, i. e. God. The *lumen* is "the communication of the Act to the potency or the reception of the Act in the potency; an amelioration of the potency by the Act": it is "consequent to the Act," i. e. given in and by the presence of the Divine Essence as the beatifying intelligible. But this same *lumen* is a true principle of the act of vision according to the tradition. Thus John of St. Thomas writes that the *lumen* "gives it [the intellect] activity elicitive of the vision; and this is the function of an effective cause, namely the vision."³⁷ And Garrigou-Lagrange writes: "The infused habit of the light of glory is a total principle proximately elicitive of the vision."³⁸

Now if both the Thomists and de la Taille be correct, then the vision causes the *lumen*, which *lumen* principles the vision! A Thomist, mindful of the distinction between the efficient and formal orders ascribes the efficient causing of the *lumen* to God as agent, not as object. As agent cause God produces the *lumen sub quo*.³⁹ This *lumen*, to be sure, can also be described as the last disposition to the object, which is therefore caused by the object—but caused by the object as *formal*, *specifying* principle. Hence Gonet could write, "The defect of power for seeing God

³⁷ *Cursus Theologicus*, I Pars, Disp. XIV, a. 1 (*In Quaestionem XII*).

³⁸ *De Deo Uno*, p. 294. Cf. Gonet, *op. cit.*, vol. I, Tract. II, Disp. III, art. 2.

³⁹ *IV Sent.*, d. 49, q. 2, a. 1, ad 15.

which [defect] is in the created intellect cannot be sufficiently supplied for by the Divine Essence under the *ratio* of intelligible species united to it," i. e. to the created intellect.⁴⁰ Yet this is the very fashion in which Père de la Taille would have that defect remedied.

In each of the French theologian's exemplifications of his theory we find two basic and constant defects, leading, naturally, to further difficulties peculiar to each case. These latter we have, in this paper, merely suggested. What is more important is the gravity of the two basic misconceptions. These are intrinsic to the theory itself: for any "created actuation" springing from the union of God as Act and creature as potency must be a hybrid of the uncreated and the created, the supernatural and the natural, the infinite and the limited. It would be necessarily a medium between God and not-God. It is a contradiction.

Again such a "created actuation," as an inevitable "response" of the creature to the presence of God as Act, must be both formal modification (since the creature is described as its material cause in the true sense of material causality) and something which is becoming (since it is, precisely, a *mutatio* of, or *passio* in, the creature, therefore an effect being made). Thus merge formal and efficient causality; thus merge perfection-in-act and perfection-in-potency. And given de la Taille's other confusion, is this to be marvelled at? If in the shadows of confused thinking the distinction between God and creature be obscured one cannot marvel that the distinction between diverse orders of creaturely things grows dim.

These misconceptions are not new, nor especially subtle in themselves though they may be obscure because they lie deep among an author's unanalyzed suppositions. The tendency to destroy or lessen the distinction between the natural and the supernatural is older than human kind; and the tendency to conceive all reality after the image of motion, in terms of becoming is almost as old as the history of philosophy.

⁴⁰ Gonet, *loc. cit.*, no. 14.

III. DE LA TAILLE AND THE THOMISTS

This section, on the relevance of de la Taille's doctrine to Thomistic tradition would be quite unnecessary were it not for his use of Thomistic authors. In his teaching about the *lumen glorie* and habitual grace de la Taille advances no serious claim to be Thomistic. He does, in those sections, quote from St. Thomas; but only de la Taille's reading into the passages there quoted can make them seem even to suggest "created actuation by Uncreated Act." No follower of St. Thomas, no interpreter of his system, is cited as ever proposing such an interpretation.

In defending his theory on Christ's grace of union, however, the Jesuit does strive, and mightily, to strengthen his position by appealing to Thomistic authorities.⁴¹ A superficial reading of those pages gives the impression of considerable success; an actual reading of the authors cited definitely dispells that impression.

Thus in the article in *Recherches* one reads "on the part of the Word as term, therefore, what we have to consider is not only a causal activity but a function of perfective Act which is not, for all that, an informing act."⁴² Then Cajetan is cited writing (among other things),

If there is a question of actuating and of being actuated within the entire compass of conceivable ways. . . . God may actuate a created thing. . . . Since therefore we admit that the human nature of Christ is perfected by the divine existence we can also admit without absurdity that it is actuated in some way by the divine existence. . . . We may say that the potency to its own existence is actuated, not by its own existence but by the divine existence far more excellently and perfectly than it would have been actuated by its own existence. . . .

⁴¹ This "defense" is of course the article *Entretien amical* in *Revue Apologétique* and in translation to be found in *The Hypostatic Union*, pp. 42-76. We have already referred to this occasionally; this section of our criticism is concerned principally—though not exclusively—with this last of de la Taille's papers on created actuation by Uncreated Act.

⁴² *The Hypostatic Union*, p. 35.

De la Taille comments on Cajetan's words, "This one example (viz. of perfective Act which is not an informing act) would be enough to establish the possibility of a relation other than that of efficiency between created actuation and uncreated Act."⁴³

But Cajetan in this place⁴⁴ is simply not speaking of a "created actuation." The "created actuation" de la Taille conceives is *not* divine, obviously, even in its proponent's concept; the actuation of which Cajetan speaks *is* divine, not created. Cajetan says: "Because the perfection of potency is called its actuation, therefore you can say that the potency [of the human nature of Christ] to its own proper existence is actuated not by its own, but by divine existence." Thus *de la Taille*: The created nature of Christ is actuated by a created reality. *Cajetan*: The created nature of Christ is actuated by *esse divinum*. The propositions are quite different; they are mutually irreconcilable. In the context Cajetan insists that he is using the word *actuatio* in a very wide sense; this, precisely because he is speaking of *esse divinum* as an actuation. Were he speaking of a *created* actuation his long explanation of the extended sense of *actuatio* would be very unnecessary; nothing in his use of *actuatio* would require such explanation.

Interestingly in this very paragraph quoted by de la Taille, Cajetan asserts the similarity between a potentiality's being perfected by assumption to divine existence, and by assumption to divine personality. Now if, as Cajetan—the authority of de la Taille's own selection—expressly says, these two are similar; and if assumption to divine existence implies a created existential actuation, as de la Taille says it does; should not the second—assumption to divine personality—similarly require a created actuation in the line of person? De la Taille concludes, as we have seen, to two existences in Christ, from the point of view of actuation. He should have concluded to two persons also, from the point of view of actuation.⁴⁵

⁴³ *Op. cit.*, p. 36.

⁴⁴ Cf. Cajetan in III, q. 17, a. 2.

⁴⁵ This point has special force in view of the peculiar view of personality adopted by de la Taille and erroneously ascribed by him to Capreolus. He writes "of the

It is, however, in the article in *Revue Apologétique* that de la Taille more notably uses Thomistic authorities. A line-by-line indication and correction of his significant citations would be possible but decidedly tedious. It seems preferable, therefore, to group the citations under the main headings of his own article. Under those headings we shall consider of the authorities cited by de la Taille only those whom all sides class as Thomists, omitting others cited who (like Suarez) unhesitatingly depart from basic Thomistic theses.

1. *The grace of union is created.*

For this proposition de la Taille cites principally Billuart⁴⁶ saying that the grace of union taken either as substantial union or as habitual grace is *caused* by the divine nature; and Cajetan⁴⁷ saying that in some sense (which he clearly distinguishes) the grace of union is a created gift. This offers no difficulty. Saint Thomas himself speaks of the grace of union, under different aspects, as both uncreated (the *esse* given) and created (the substantial joining of the human nature to the Word and the consequent relation). As to the formulas, there is no question: disagreement arises only as to what we shall understand by the *unio substantialis* which Billuart describes as created; and the *mutatio* and *substantialis compositio* mentioned by Cajetan. Shall we understand them as realities either *in fieri* (*mutatio*) or *in facto esse* (*unio substantialis*, and *substantialis compositio*) distinct from both natures united in the Word? Are they actuations distinct from the human nature in its newness of being, and with the relation of union, both of

two terms, humanity and existence, the one that holds the other is the person" and again for de la Taille the whole problem of personality has a satisfactory solution "drawn from one principle only: namely, the equation between *created personality* and *ownership of created being*." See *The Hypostatic Union*, pp. 19, 30.

The whole point of de la Taille's theory is that the human nature of Christ *does* have, or own, its existential actuation distinct from the *esse Verbi* as creature from Creator. Thus in the same sense in which he predicates two existences of Christ he ought to predicate two persons.

⁴⁶ Billuart, *op. cit.*, *Tractatus de Incarnatione*, diss. IV, a. 5 (t. V, p. 422).

⁴⁷ Cajetan in III, q. 2, a. 10, n. 5.

which are admittedly created? This brings up the second point.

2. *Besides the humanity and the Word, and the real relation of the humanity to the Word another reality, founding the relation must be admitted. This reality is created and consists in the TRACTIO or MOTUS of the humanity to the Word which MOTUS, of course, endures and which is the grace of union, a true medium between the human nature and the Word. For this de la Taille cites St. Thomas' speaking of the Incarnation in terms of *motus*⁴⁸ a *passio*⁴⁹ a *tractio*⁵⁰ a change⁵¹ of the human nature and secondly Billuart assigning as the foundation of the real relation "a real change in the humanity, its passive traction to the Word," which "is the permanent foundation of the relation," and a "termination in the human nature."⁵²*

Curiously Père de la Taille does not quote some important passages in Billuart. The latter writes, in the very article cited by de la Taille: "The Word is united to the humanity in this that it terminates and sustains the humanity . . . , *actually terminating is not something created* by the power of terminating or something *distinct from His personality* . . . , as the Word is immediately *per seipsum* united to the humanity, so the humanity is conceived united to the Word immediately *per seipsam*." And as to the meaning of the "change" of the human nature Billuart notes "the human nature cannot be said to be rigorously and strictly changed through the Incarnation. . . . A thing said to be changed preexists to the reception or loss by reason of which it said to be changed," and he adds that Christ's humanity did not preexist to its assumption by the Word. "It can, however, be said to be changed in a broad sense of the word." And what is the *passio* in the human nature of which Billuart speaks? He indicates that "it is nothing other

⁴⁸ *III Sent.*, d. 2, q. 2, a. 2, qcla. 3.

⁴⁹ *Summa Theol.*, III, q. 2, a. 8.

⁵⁰ *Ibid.*, a. 6, ad 2.

⁵¹ *Ibid.*, q. 2, a. 6, ad 1.

⁵² *Loc. cit.*, a. 3.

than the [human] nature passively made dependent on the Word and communicating in Its being." It is the ancient truth: *sublato motu ab actione et passione non remanet nisi ens cum relatione quadam*. In the same place Billuart interprets St. Thomas to exclude *every* medium "because he says that union [is] . . . as a consequent effect, and because nowhere does he even make mention of this mediate nexus."

As for St. Thomas' words he used them for the rather good reason that we have no others. We can name things only as we know them: and as we know things in the natural order (whence all our words are derived) change or *motus* is always involved when a reality is found outside its connatural condition. In attempting to describe the *de facto* condition of the humanity of our Savior, therefore, we have to use words which imply change or else refuse to discuss so transcendent a fact at all.

But it is one thing to admit the limitations of our words: another to assert in the supernatural order the verification of the merely natural implications of those words. Thus while St. Thomas had to use words like *passio*, he never conceived the *passio* as something distinct from Christ's humanity and its relation to the Word. Because that humanity did not preexist to its assumption by the Word, and because that assumption involved no gradual process but only "*factum est*:" therefore, for St. Thomas there is not a distinct reality corresponding to the *passio*. The position of Père de la Taille, that a *passio* or *mutatio* is a reality distinct from the humanity and its relation to the Word, a true *motus*, would imply that the humanity pre-existed to the Incarnation, then gradually *became* united to the Word for *motus* as a distinct reality is, can only be, a gradual process in a preexisting subject. No Thomist, nor any Catholic, holds to such a conclusion.

3. *The TRACTIO or MUTATIO which in Christ's Sacred Humanity founds the relation of union to the divine nature is a created actuation by Uncreated Act.* For this Cajetan is cited, saying "the human nature is actuated by the divine existence . . . far

more excellently than it would have been by its own existence,"⁵³ and John of St. Thomas is quoted at length, in his doctrine on the substantial sanctification of Christ's humanity.⁵⁴

From Cajetan no support for de la Taille can be alleged: in the place cited there is no implication of "created actuation" distinct from Christ's humanity with its relation. Rather arbitrarily de la Taille interprets the actuation mentioned by Cajetan as a *passio*, a created modification distinct therefore from the changeless Person and the created nature modified. Cajetan has no such concept: this has been amply shown above. The following additional points (if any were needed) tell rather heavily against de la Taille's interpretation of Cajetan. 1) In the paragraph cited the great Cardinal expressly excludes any actuation *per modum inhaesionis* of Christ's humanity; de la Taille's "created actuation" would inhere in the Savior's human nature. 2) Cajetan, as we saw, held that Christ's "potency for proper [created] existence is actuated . . . through divine existence"; according to de la Taille it is not; for he teaches that the *esse* of the Word is as Act, but not as actuation, to the Sacred Humanity. Cajetan equates "*actuatio*" in this case with "*potentia actuata per divinum esse*,"—not so de la Taille. 3) The third point—that logic should demand of de la Taille that he conclude to two persons in Christ (in the same sense in which he concludes to two existences)—has already been made.

Cajetan's teaching, however, de la Taille rather quickly dismisses and insists that it is John of Saint Thomas who is clearly on the side of the new doctrine. He quotes extensively from the Joannine Commentary on Question Seven of the Third Part of the *Summa Theologiae*.⁵⁵ The very number of quotations, the length of some of them, plus the fact that they are directly concerned with Christ's sanctity, not His union, make their analysis rather unwieldy. Yet I think that with complete

⁵³ Cajetan III, q. 17, a. 2, n. 18.

⁵⁴ John of St. Thomas, *Cursus Theologicus*, III, disp. 8.

⁵⁵ *The Hypostatic Union*, pp. 68-72 especially.

fairness to de la Taille and his extended argumentation his main points can be reduced to these two: 1) John of St. Thomas teaches that the subsistence of the Word intrinsically changes the humanity of Christ; and 2) that the humanity neither subsists nor exists in an infinite manner. For de la Taille the conclusion is clear: John of St. Thomas teaches that the actuation of Christ's humanity by the Act (which is the Person of the Word) is a created, finite effect—therefore “created actuation by Uncreated Act.”

But how deeply did de la Taille understand him whose authority he quotes so lavishly? In the very article cited John of St. Thomas writes that in the case of Christ “the sanctifying form cannot be anything created for nothing created is a *ratio* constitutive of the natural Sonship of God” which Sonship, of course, is proper to the Man Christ. *A pari* then—and de la Taille's entire argument proceeds *a pari*—the form whereby Christ's humanity exists is nothing created. And John of St. Thomas continues that the form sanctifying cannot be “the union by which the humanity is passively rendered assumed *because this is only the dependence of the humanity on the Divine Person.*” *A pari* then, that by which the humanity is passively rendered assumed is only a relation, viz. dependence. This is traditional Thomism: it is not de la Taille's view, namely, that the union whereby the humanity is rendered assumed is a created reality, a *passio* distinct both from the humanity and its relation.

Why does John of St. Thomas speak, as he does, of the humanity's having sanctity, (and *a pari*, subsistence and existence) *modo finito*? And why does he speak of sanctity, (and *a pari* subsistence and existence) introducing as an effect some real change in the humanity?

The answer to the first question is not too difficult. Note the very words of the authority in question “*humanitas redditur sancta*” and so forth. The great Thomist is speaking not of the *Man* Christ but of the *humanity* of Christ. Now whereas the Man Christ is the Son of God, Divine: the humanity is a creature, and finite. The Divine Word *ter-*

minates, encloses that nature: the Word does not inform it, or enter into its constitution. Hence we cannot say that that humanity is infinitely holy, infinitely and necessarily beloved of God; it is loved (and therefore holy) according to measure, and in a free, not necessary mode. Why? Because that humanity is not God: God necessarily and infinitely loves only the unique, infinite God, Himself. So the sanctifying form in Christ—the *Verbum*—is infinitely holy; but the sanctity of the humanity which is its conjunction to God is a *union*, a relation, as John of St. Thomas teaches. That relation terminates at an infinite sanctity but in its own being is a created thing: hence the consistent teaching that the sanctifying form is not a creature: yet the humanity is holy in a finite mode. Similarly we many speak of the finite mode of existence of the *humanity* of Christ.

Why, secondly, does John of St. Thomas speak of the Word's sanctity (and *a pari* His subsistence) as effecting some intrinsic change in the Savior's human nature? In the context he is arguing against Vasquez' teaching that the sanctity which comes to Christ through the Hypostatic Union is something of the moral order alone, consisting in "*extrinseco respectu*." John of St. Thomas answers that the sanctifying principle or form is not, as Vasquez thought, the divine nature as distinguished from the Person but the Person Himself hypostatically united. Hence the principle or form *is* intrinsic as the term of that created nature; but the sanctifying form, and the informing form is the Godhead according to his clear words, not a creature.⁵⁰ Why, then, mention an intrinsic "effect"? Because hypostatic sanctity is a formal, true principle of certain *effects intrinsic to the humanity*, such as the exclusion of sin. This the very words of John of St. Thomas indicate. But this effect is *not* the sanctification of Christ any more than destruction of sin in us is our habitual grace—though it is an effect of that grace.

The great Thomist speaks also of an "*immutatio*" of the

⁵⁰ John of St. Thomas, *loc. cit.*, n. 20.

created nature by the *suppositum*, the Person. Again in the context the meaning is clear. The *immutatio* is not a *passio*, some reality distinct from both created nature and uncreated Person: it is simply a strong assertion of the reality of the termination of that human nature, outside the natural course of events, by the Word. John of St. Thomas expressly speaks—to de la Taille's admitted annoyance—of the divine *esse* and subsistence *informing* the created nature; he says expressly, as we have seen, that the union is a relation and nothing more. It seems a bit arbitrary of de la Taille to insist that John of St. Thomas means, not what he says, but what he does not say: for nowhere does he speak of a created actuation, whereas he does exclude such a reality. The "change" refers to the fact that the intrinsic termination of Christ's humanity is extraordinary, and constitutes a condition totally outside the natural order. But such a use of *immutare* implies no *passio* whatsoever, no reality distinct from the nature "changed," i. e. united to the divinity—except, always, the consequent relation.

4. *In Christ there are, in some true sense, two existences.* For this St. Thomas' words in the *De Unione Verbi Incarnati* are cited.⁵⁷ In that place the Angelic Doctor does teach that in Christ there is one *esse* simply speaking, but two in a secondary sense.

To the difficulty created by these words of St. Thomas we shall return in a moment. The point now is this: the Thomistic school has unanimously taught the unity of Christ's existence. so clear is this point in Thomistic teaching and tradition *in spite of the difficulty created by St. Thomas' words!* Let us say frankly that Père de la Taille's attempt to show this point as traditional Thomism is so inadequate as to be amusing. He offers in favor of this teaching the great weight, the full authority of Gregory Cippulus—then kindly identifies that good friar as "Regent of the Minerva in the first half of the seventeenth century." At least Cippulus is not precisely on everybody's tongue. Surely de la Taille who displays minute

⁵⁷ St. Thomas, *De Unione Verbi Incarnati*, a. 4.

acquaintance with the works and words of the great Thomists ought to have known that on the other side those great stand together—Capreolus, for example, and Cajetan, John of St. Thomas, Gonet, the Salmanticenses, and Billuart, and so on to contemporary or near-contemporary authors—Billot, Hugon, Garrigou-Lagrange, Daffara, and the rest. One is saddened to see employed a device which is not quite honest—the creation of the impression that the teaching of John of St. Thomas leads to this doctrine of a two-fold existence in Christ, plus the statement: “True we do not find in him an explicit mention of two existences.”⁵⁸ Well, there is such mention: John of St. Thomas mentions and classifies as *erroneous* the doctrine of a twofold existence in Christ⁵⁹ (that stricture, of course, was directed against this teaching in its classical form, not in the form proposed by de la Taille. This latter never occurred to John of St. Thomas). Suarez, Tiphanius, and their followers, and now de la Taille: these have denied the unicity of existence in Christ. The tradition of Thomism has been and is to the contrary; even tremendous effort to obscure the fact ought not to succeed.

Yet, amusingly, even the authority of obscure Cippulus could not be said with certainty to be with de la Taille. One might almost wish it were, so that that poor man might remain undisturbed, as doubtless he has been these many years. The fact is that his words as quoted by de la Taille do permit a more traditional interpretation. And surely a Regent of the Minerva deserves such a courtesy!

As to St. Thomas' words in the *De Unione Verbi Incarnati* the tradition is—unless we make an exile of Cippulus—unanimous; St. Thomas' judgment in this one text is neither final nor usual. In all his other works in which the question arises he insists on one *esse* in Christ. Whatever be the date of composition of this *Quaestio Disputata* (and Cajetan dismisses that question far too gruffly), it certainly preceded the *Com-*

⁵⁸ *The Hypostatic Union*, p. 74.

⁵⁹ *Cursus Theologicus*, III, q. 17, a. 2.

pendium Theologiae. In the *Compendium*, his last discussion of this question, St. Thomas simply reaffirms the position he had taught from the beginning, had taught in the *Sentences*, in the *Quodlibets* and in the *Summa Theologiae*; in Christ there is but one existence.⁶⁰

EPILOGUE

Besides the exposition and defense of his position thus far considered, Père de la Taille published an even earlier statement of his theory.⁶¹ This earlier statement, while similar to the later one, differs from it in sufficiently important ways to make necessary a brief consideration of it, lest we seem to ignore the weight of argument advanced for this doctrine by de la Taille himself.

The first half of this exposition is a statement in striking, forceful terms of the dogmatic truth of the Incarnation; a statement which is clarified, and given deep meaning by reference to the ancient errors on which the terminology of the Incarnation was hammered out.

The second half is the speculative portion of the paper. Two problems in particular are considered: 1) The condition of Christ's created nature hypostatically united to the *Verbum*; ⁶² and 2) the conditions of the Hypostatic Union itself.⁶³

De la Taille's doctrine with respect to the first problem may, I think, justly be summarized in the following fashion: a) Absolutely speaking the union of Christ's human nature to the *Verbum* could end; then would "the humanity remain; and remain in all its essentials exactly what it is now; only instead of being the Word's own it would be the nature of some mere man . . . that would spring up at once from the separation between deity and humanity."⁶⁴ Hence there is some *real*

⁶⁰ *III Sent.*, d. 4, q. 1, a. 2, qcla. 1; *Quodl.* IX, q. 2, a. 2; *Summa Theol.*, III, q. 17, a. 2; *Compendium Theologiae*, c. 212.

⁶¹ This is of course the paper entitled "The Schoolmen" referred to above, footnote 1. It is contained in *The Hypostatic Union*, pp. 3-25.

⁶² *Op. cit.*, pp. 14-20.

⁶³ *Op. cit.*, pp. 20-24.

⁶⁴ *Op. cit.*, p. 14.

difference between a humanity in Christ's dominion "and the same humanity otherwise tenanted"—because "something in the world of fact has changed; and something not merely accidental" because personality is not an accident—yet, note, there is no change in the substance of the nature. How to account for a real change of the order of substance when the substance in question remains essentially unaltered? b) The different solutions advanced by Scotus, by Suarez, and by Cajetan (i. e. their theories of personality) de la Taille dismisses as, for various reasons, incapable of explaining the data of the problem:⁶⁵ Hence he is left with Capreolus' theory. c) As de la Taille interprets Capreolus "if the personal factor is neither antecedent [against Cajetan] nor consequent [against Suarez] to the substantial existence it must be found within it."⁶⁶ Thus a created nature which possesses commensurate and connatural existence *is* a created person *ipso facto*: if it is maintained in being by the existence of the Word it is not man, not a person because not the autonomous owner of being: it is owned itself by One who imparts to it fellowship in being with Himself. "Of the two terms, humanity and existence, the one that holds the other is the person." One principle solves all "namely *the equation between created personality and ownership of created being.*"⁶⁷

The second problem—the conditions of hypostatic union itself—we shall reduce to this question: how can an uncreated existence be the existence of a created being? De la Taille answers, "When it is said that the humanity exists by the divine existence the meaning is that to humanity the divine existence is communicated as an actual principle of being instead of the formal principle of existence which normally ought to be its own."⁶⁸ The actualizing principle is eternal, uncreated; the communication on the contrary is not eternal,

⁶⁵ I shall not review here de la Taille's arguments against these theories of personality, for those arguments, while very interesting in themselves are not of immediate importance in facilitating the understanding of de la Taille's own position.

⁶⁶ *Op. cit.*, p. 19.

⁶⁷ *Op. cit.*, pp. 19-20.

⁶⁸ *Op. cit.*, p. 21.

but is a mere creature. "There is a difference therefore between the thing communicated and its communication. The one is not the other. . . . The communication of the Word's own being is something created . . . and *there* is the new element introduced by the Incarnation." This communication, this new reality is created, substantial, supernatural. Christ's *esse*, as the actualizing principle is *one*; yet the existential actuation of His humanity is not the divine existence. That created actuation "is absolute as a substantial actuation; and it is relative, essentially relative to the Word's personal existence."⁶⁹ Human personality is the ownership of existence; hence "between the nature and its connatural existence there is no room for anything: Between the human nature of Christ and His divine existence there is room for a communication of the latter to the former: a *created* communication, which is in fact the hypostatic union . . . the created grace of union." This communication is not the act of being but a created association of the potency—the human nature—with Uncreated Act.

The criticism of this exposition can hardly be notably different from what we have already suggested; this earlier exposition while differing from the other in setting, in context, implies essentially the same elements. We shall therefore consider this defense of de la Taille's theory most briefly.

We note at once the repeated assertion of a created substance of the supernatural order—which as we have shown implies the denial of the real distinction between the supernatural and the natural orders. Against it we can only repeat St. Thomas' words, echoed in the entire Thomistic tradition, in defining substance: "*nothing extrinsic is included: every substance is defined in terms merely of its material and formal principles . . . the reason is that a definition must express what a thing is, and . . . substance is something complete in its being and kind.*"⁷⁰ For de la Taille the communication from the *esse* of the *Verbum* to the humanity (of Christ) is "absolute as a

⁶⁹ *Loc. cit.*

⁷⁰ *II de Anima*, lect. 1.

substantial actuation; and it is relative, essentially relation to the Word's personal existence." Thus it could not be defined merely by intrinsic causes as St. Thomas says substance must be defined "in terms merely of its material and formal principles," for "substance is something *complete* in its being and kind." This teaching, then, is clearly contradictory to Thomism; but what is worse it undermines, as we have sufficiently shown above, the distinction between the supernatural and the natural, the distinction between the divine and the created.

Secondly, this explanation of "created actuation by Un-created Act," no less than the previously considered exposition, takes for its very starting point, its central postulate, a confusion between diverse orders of causality. For here, too, we find the teaching that to the humanity of Christ there is communicated from the *esse* of the Word an actual principle of being which is created, substantially distinct from the Word (as Act) communicating. This communication is not the act of being but "a created association of the humanity with Un-created Act."

Now according to what order of causality does this created actuation proceed from the *esse Verbi*? De la Taille in this article does not ask the question; nevertheless it clamors to be heard. It is clear, of course, that this "created actuation" ought to be conceived as proceeding from God as from an efficient cause. It is created and all creatures depend on God as on their efficient cause. But for a special reason it ought to be conceived as proceeding from the *Verbum* by way of efficiency—because the *Verbum* is according to the new theory a special principle of this actuation. The actuation as creaturely would be adequately distinct from the *Verbum Increatedum*; and hence the *Verbum* could be its special principle only according to extrinsic causality.

But let us probe this further. Obviously Père de la Taille would not be satisfied with assigning to the Word merely efficient causality of this communication because all Catholics admit the efficiency of any one divine Person is the efficiency of the divine nature, common to all three Persons: if this were

the Word's only causality of the actuation in question, Christ's humanity would be that of all three divine Persons. *Absit!* No, for Père de la Taille the "actuation" must be a quasi-formal effect of the *Verbum*. Very well—what is a quasi-formal cause in this theory? Is it an intrinsic or an extrinsic cause? The divine Word can be an *intrinsic* cause of no creaturely reality, or, stated the other way, no creature can be intrinsically divine, or non-creaturely. For intrinsic causes are only two: formal and material. It is according to faith that God can be the intrinsic form of no creature; and it is according to faith that He can be subject or matter of no compound. Thus the dilemma: if the *Verbum* is an intrinsic cause of the "actuation," then God has entered into creaturely composition, and a creature is intrinsically divine; if, contrarily, the *Verbum* is only an extrinsic cause of the "actuation," then either that actuation unites the humanity of Christ to all three divine Persons—a clear heresy—or it does not. If it does not, then the extrinsic causality in question is no different in kind from God's extrinsic causality of any other creaturely effect, with the result that the union of Christ's human nature to the *Verbum* could not be different in kind from any creature's "union" with God, for every created thing, is, in its creaturely being, from God efficiently. On any reasonable supposition, then, de la Taille's position offers rather uncomfortable consequences.

This same basic confusion is evident in other judgments made by de la Taille. For example, he states that if the human nature of Christ were to be separated from the Word "it would be the nature of some mere man . . . that would spring up at once from the separation between deity and humanity." Let us presume that in conformity with his teaching generally de la Taille is supposing that a new *positive* thing, viz. a new personality would succeed: still his language manifests confusion between the orders of efficiency and formality, becoming and being. For that new personality as a formal thing would "spring up at once" and "from the separation." There simply

is no taking into account of the role of any efficient cause, or any producing of the new reality. The new thing as a formality would, presumably be self-explanatory from the point of view of efficiency: it springs—merely from the separation.

As a mere appendage it should be noted, I think, in justice to Capreolus, one of St. Thomas' truly great commentators, that de la Taille gives no evidence of having understood the theory of created personality elaborated by the *princeps Thomistarum*. On the contrary, de la Taille misrepresents that venerable and vigorous theory; and Capreolus is not likely to gain in lustre from association—however unwanted!—with this doctrine. Adequately to expose the point would require a distinct and general article on the Thomistic concept of created personality.

It can never be with pleasure that one concludes that a work built by a great man, and at the cost of tremendous labor, is seriously deficient. Therefore, one could not undertake a rigorous criticism of de la Taille's theory of "created actuation by uncreated act" merely for the sake of intellectual exercise. But that theory, weak and objectionable in its very foundations, is being embraced and hailed today as "an introduction to the purest scholastic tradition," "a fine supplementary text for the *De Verbo* course," "an outstanding exposition of the metaphysics of sanctifying grace and the beatific vision," and so forth. Sadly, it is none of these things. It is novel, opposed to tradition; it is doctrinally dangerous; it is, metaphysically, rooted in and built upon confusion.

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ABSTRACTION AND THE DISTINCTION OF THE SCIENCES

A RECENT author¹ has treated of abstraction in regard to its objective basis and to the division of the speculative sciences. He notes that moderate realism requires an objective basis for the abstractive process of the intellect, and asserts that this basis can be found in the real composition of distinct principles which are combined in sensory things. There will be as many orders of abstraction as there are of real composition in these things. Three orders of composition can be found in sensory things, namely, the composition of substance with accidents, the composition of substantial form with primary matter, and the composition of essence with existence. In each of these three orders there is an act or formal principle combined with a potential subject, although both subject and form are diverse in the distinct cases, not similar. It is asserted that in regard to each of these three orders the intellect is able to grasp an act or formal principle apart from this or that potency. Thus there are three ascending orders of abstraction from sensory matter, each of which has a basis in objective reality, and according to which there is an increasingly deeper penetration of sensory being by the inquiring mind. It is suggested that the usual ordering of physical and mathematical abstraction is defective and should be the reverse. The real composition of substance with accident is the basis newly proposed for the abstraction which should be regarded as of the first degree. This composition is the more superficial, and yet it is the basis for the abstraction by which we attain the object of mathematical science. The real compo-

¹ F. S. Connolly, "Science vs. Philosophy," *The Modern Schoolman*, XXIX (1952), 197-209; "Abstraction and Moderate Realism," *The New Scholasticism*, XXVII, No. I, (1953), 72-90.

sition of the substantial form with primary matter is the basis proposed for the second degree of abstraction, by which we attain the object of the philosophy of nature. This science is not very extensive, because there is only a small number of natural species to be known philosophically. Modern natural science is distinct from the philosophy of nature, because it is merely empirical and schematic knowledge, and is not science in the Aristotelian sense of the term. The real composition of essence with existence is the basis proposed for a third degree of abstraction, by which we attain the object of metaphysics.

Finally, the author inquires why St. Thomas was unable to correlate the three degrees of abstraction and the three kinds of speculative science with the distinct orders of real composition in sensory things, a correlation which seems to be demanded by moderate realism.

To the present writer it seems that St. Thomas has clearly answered all of these and many other pertinent questions in his explanation of the fifth and sixth questions of the work *On the Trinity* by Boethius.² But because this doctrine which St. Thomas explains and defends is not well known or well understood, we shall try to interpret it and apply it to the problems raised above. In doing so we shall depart somewhat from the order of the articles in the commentary by St. Thomas. The Angelic Doctor first proves that there are three and only three kinds or genera of speculative science, and then he proceeds to defend, characterize and compare the knowledge attained in each. For the present purpose we shall consider first what it is to abstract, and why we abstract. Then we shall try to see what is required for the validity of abstract knowledge, and finally what it is that distinguishes the different sciences.

ABSTRACTION

To abstract, says St. Thomas,³ is to consider separately things which are not really separated but are conjoined in reality. We abstract because we are not able to know things perfectly in

² *In Boet. de Trin.* (ed. Paul Wyser. O.P.; Fribourg, 1948).

³ *Ibid.*, q. 5, a. 3; *II Physic.*, lect. 3.

their wealth of detail and intelligibility in a single act of knowing. What we cannot do in one act we try to accomplish in many acts. We stop, look and listen. We consider separately the different intelligible aspects of things in the hope of understanding things better.

We know that there is no hope of understanding the singular sensory thing as such, because it is material and contingent, variable and corruptible. For this reason many thinkers have held that scientific knowledge of sensory things is impossible. There seems to be an unbridgeable gap between the particular and contingent things presented to the senses and the objects of scientific knowledge, which are immaterial, universal and necessary. Plato believed that we can attain only opinions about sensory things, and can give only a probable or likely account of the sensory world. He thought that the objects of scientific knowledge are not to be found in this mobile world, but pertain to another world of universal and necessary forms or ideas. Kant considered the same problem and decided that the universal and necessary elements in our knowledge come from the structure of our minds, not from the things known. Thus the Platonic and Kantian solutions are poles apart.

Neither Plato nor Kant distinguished between the thing known and the manner in which it is known. It was by means of this distinction that Aristotle found a moderate and reasonable solution to the problem of universals and scientific knowledge. He realized that the natures or essences of sensory things can be understood apart from the individuals of the species. The essential natures or reasons of things are separable in thought from whatever is accidental or nonessential, and when they are considered in this way, that is, apart from individual and accidental differences, sensory things are intelligible and can be known in a way that is universal and necessary. It is the individual which is subject to change, and which is generated and decays. The essential natures or reasons of things are not subject to change except inasmuch as they are found in this or that individual. Considered apart from the individual, and apart from the here and now, the essential natures are

immobile and intelligible in themselves, and they are the principles by which particular things can be understood.

It is clear that the individuating notes are not of the essence or essential nature, which is one and the same in the different individuals of the same species, as human nature is the same in all men. Because the individuating notes are incidental to the essence, they are safely set aside when we wish to understand the essence. Moreover, the individual essence as such is something material and opposed to our knowledge, and we abstract from it in a merely negative way. Thus by abstraction both positive and negative we attain knowledge of an essential nature apart from individual differences which do not necessarily pertain to it. This essential nature is something which is in many individuals, as human nature is in many men: it exists in them; it is multiplied in them and somehow identified with them. Hence it is validly predicated of each and all the members of the genus or the species.

The possibility of many individuals of the same species depends both upon the real distinction between essence and existence in creatures and upon the distinction between primary matter and the substantial form. More generally, all multiplicity depends upon the real distinction between potency and act, because act as such is not multiplied save as a determination of a potency. This principle applies also to the composition of substance and accident. It is on these real distinctions that the validity of our abstractions is ultimately based. In particular the validity of our generic and specific concepts of sensory things and the doctrine of moderate realism depend upon the distinction between primary matter and the substantial form. It is because the multiplication of individuals in a species and their numerical distinction depends upon the division of the primary matter, which is of itself purely potential, yet has an order to quantity and position in place and time, and also because there is only one substantial form or specifying principle in a primary unit, that an essential nature can be multiplied in many individuals and can be known in a concept which is univocally predicable of each.

Yet St. Thomas does not propose the real composition of primary matter and substantial form as the basis for the abstraction which he attributes to physical science. We can and do attain some valid knowledge of natural things before we know what the proper principles of these things are. Hence St. Thomas looks for a more evident basis for the abstraction which is employed in natural science and which enables us to attain a full and complete knowledge of natural things.

St. Thomas places the proximate foundation for any valid abstraction not merely in the real distinction of one principle from another, but also in the lack of essential order or dependence of one upon another.⁴ We can abstract some things which are not really separated from each other, and can understand some apart from others, but not all. We can understand some things separately, but not everything. Things which depend upon one another, or which have an essential order to each other, can neither be nor be understood separately.

A thing is intelligible inasmuch as it is actual or related to an act. Hence a nature or essence, in order to be understood, must itself be an act, or must have an actual principle joined to it, or must be related to something actual. When this act has some essential order to something else, or some intrinsic dependence upon something else, then it cannot be abstracted from the other or understood without the other. Parts which are essentially dependent upon the whole can be understood only in relation to the whole, as the hand or foot can be understood only in relation to the man. A substantial form is essentially the act of its proper matter, and because it is essentially ordered to its proper matter it cannot be understood apart from the matter. An accident is essentially dependent upon its proper subject, and cannot be understood apart from its subject, as motion cannot be understood apart from the mobile. A relation is essentially ordered to its proper term, and cannot be understood without the term, as a son cannot be understood without a father or mother.

⁴ *Ibid.*

But if the act by which a nature is understood does not depend upon another, or is not essentially ordered to something else, then even though it is combined with another it can be abstracted from the other and understood separately, as a letter can be understood apart from a syllable, an element apart from a compound or an animal without a foot, but not conversely in these cases. Quantity can be understood without a special subject such as an apple or an orange, but not without some subject. A quality such as white can be understood without a special subject such as a man, and conversely man can be understood without the special quality.

In fact we distinguish or divide one thing from another in different ways according to the different operations of our intellects. There is a twofold operation of the intellect: one by which we apprehend an essence or essential nature; the other by which we judge that something is or is not. When we distinguish by judging that one thing is not another or in another, this knowledge is properly called separation, not abstraction. But when we apprehend an essence or essential nature, and understand one thing without understanding another, then our knowledge is rightly called abstraction if the things which are understood one apart from the other are really together in the primary being. When we understand things separately in this way we do not judge that they are really separated. Hence there is no error in our abstraction, as there would be if we were to judge that things which are understood separately are really separated, whereas they are not.

There are two ways in which things which are really together can be understood separately, or abstracted one from the other, and so there are two kinds of abstraction. The whole is together with its parts, and the form with its matter or subject. Some wholes can be understood separately, without some of their parts, and some forms can be understood apart from some matter or subjects.

The abstraction of the whole depends on the composition of the essential nature, that is, the formal or essential whole,

with its material or accidental parts. The formal whole is the essential nature, generic or specific. The material parts are the inferiors or individuals with all that is incidental or non-essential in them. In the case of man the formal whole includes the organic body and the rational soul as essential physical parts. It includes also, at least in a general way, all the integral parts and powers without which a man cannot be or be understood. The material or incidental parts are the non essentials, without which a man can be and be known, and all that is peculiar to the individual as such: this body and this soul, this flesh and these bones. To consider the whole essential nature apart from the individual and the incidental is to abstract the universal from the particular. It is to consider the essential nature of the whole apart from the non essentials, that is, without the material or incidental parts not required for the essential nature.

The abstraction of the form is based on the composition of the subject or matter with the form. A form can be understood without a certain matter if its essential nature does not depend upon that matter. An accidental form cannot be abstracted from all substance, nor can any accident be abstracted from its proper subject on which it has an essential dependence. Yet a common accident such as heat can be abstracted from a special subject such as iron, and motion can be abstracted from a special subject, but not from the mobile as such. Furthermore, accidents accrue to a substance according to a certain order: first quantity, then the qualities, sensory characteristics and motions. Sensory qualities and motion are dependent upon quantity, and cannot be or be understood without quantity. But quantity is not essentially dependent upon the sensory qualities or motions, and can be understood in a substance as something antecedent to the sensory qualities and motion without including them. A substance together with its quantity and sensory qualities is called sensory matter. Quantity in its essential nature does not depend upon sensory matter, but upon the substance. Hence quantity can be abstracted from sensory matter and motion, and can be understood apart from

sensory matter and motion, but not apart from the substance. The substance as distinct from its accidents is called intelligible matter, because considered without its accidents it is an intelligible object but not sensible. Thus quantity can be abstracted from sensory matter and motion, but not from intelligible matter. This is an abstraction of a form, quantity, from sensory matter and motion, but not from intelligible matter.

A substantial form is essentially the act of its proper matter, and cannot be abstracted from its matter, although both matter and form can be considered in common, not as this or that matter or form. Moreover, the complete substantial nature or essence is realized in distinct individuals, and does not depend essentially on this or that individual. Hence the substantial nature can be abstracted from the *suppositum* or person not only as the whole is abstracted from its material and accidental parts, as man is abstracted from Peter and Paul, or animal from cats and dogs, but also as the essential or formal part is abstracted from the whole subject or *suppositum* in which it occurs materially and incidentally, as humanity is abstracted from man. This is an abstraction of a form or part, an essence or essential nature, from the matter or subject, the *suppositum* or person, on which it does not depend in order to be and to be understood.

Thus in order to perfect our understanding of things we divide one thing from another both by apprehension and by judgment.⁵ Division by judgment is called separation rather than abstraction. Separation looks to the being of things, and our separation in judgment is true or false, valid or invalid, depending upon whether the things are or are not really separated or distinct. Division by apprehension is called abstraction if things which are together are understood one apart from the other. By abstracting we neither affirm nor deny that the things are together. We simply consider one without the other on which it does not essentially depend,

⁵ *Ibid.*

apart from which it is intelligible in itself. Hence abstraction is a valid way of knowing things, and contains no falsity. There are two kinds of abstraction, that of the whole and that of the form or part. In abstraction of the whole the universal is understood apart from the singular and apart from all that is nonessential to the whole. In abstraction of the form an essential nature is understood apart from the subject in which it is realized materially and incidentally. A substantial form cannot be abstracted from its proper matter, but a substantial nature or essence can be abstracted from the *suppositum* or person. An accidental form can be abstracted from other accidents on which it has no essential dependence, but not from its proper subject. A common accident can also be abstracted from a special subject on which it does not depend essentially, but not from every subject.

In his commentary on the work of Boethius, St. Thomas clearly distinguishes between separation and abstraction, and between the two kinds of abstraction. He says that separation pertains to metaphysics; that the abstraction of the form pertains to mathematics, and that the abstraction of the whole pertains even to physics. In fact this latter abstraction is used in every science, because in every science we leave aside what is incidental and consider the essential. St. Thomas does not say that the various sciences are essentially determined by separation or abstraction. These are common ways of knowing and perfecting our knowledge of things, and they do not specify the sciences, although one way is more characteristic of one science and another of another. What St. Thomas shows is that through separation and the different kinds of abstraction we can attain valid knowledge of things in the different sciences, supposing that there are different sciences.

DISTINCTION OF THE SCIENCES

But how are we to distinguish the sciences? Are there irreducibly different sciences, or are all divisions merely arbitrary, and all sciences really parts of one and the same science?

In solving this question St. Thomas points out in the first place that there is a profound difference between the speculative and the operative sciences.⁶ These differ by reason of their respective ends. The end of the speculative sciences is simply the knowledge of the truth about things, or the satisfaction of the intellect in the knowledge of the truth. But the end of the operative sciences is some action or operation of ours to which the scientific knowledge is directed, and for the performance of which our knowledge is used as a means. Hence the operative sciences are concerned with something which can be made or done by ourselves, that is, by our own work or effort, and so the scientific knowledge of these things is not an end sought for its own sake but a means employed to direct our work. But the speculative sciences are concerned with things which are not made by man, and so the knowledge of these things cannot be ordered to another operation as its end, but is an end in itself and is sought for its own sake. The operative sciences are distinguished according to the things which can be made or done by us but which require irreducibly different principles for their accomplishment. For example, music, painting and architecture require different principles and are distinct arts; the knowledge of one art does not suffice for the work of another. The speculative sciences are distinguished according to the things which are not under our power or control but which can simply be known in a speculative way.

But how many distinctions are there among the things which can be known speculatively, and can one and same thing pertain to different speculative sciences? Just as we have more than one sensory power, but not as many powers as there are sensory things in the world, and the same thing can be known by different senses but not in the same way, so it is also with the speculative sciences. The senses are distinguished according to the different kinds of sensibles as such, for example, color and sound, not according to the different kinds of things, such as cat or canary. It is merely incidental to the sensible as such

⁶ *In Boet. de Trin.*, q. 5, a. 1.

to be a cat or a canary, whereas the essential differences of the sensibles are those of color, sound, odor, etc. These are irreducibly different things which act in irreducibly different ways upon the senses, and according to these the senses are distinguished. In like manner the speculative sciences are distinguished according to the essential differences of things which can be known speculatively.⁷

A thing which can be known speculatively is an object not merely of sense or imagination but of intellect and science. As such it must be something immaterial, universal and necessary. But that which is necessary is immobile, because the mobile is contingent and capable of being or not being. Hence the thing which can be known speculatively and which is the object of the speculative power is something both immaterial and immobile. Consequently it is according to the order or degree of removal from sensory matter and motion that the speculative objects and the speculative sciences are distinguished. This removal from matter and motion is accomplished by abstraction and by separation, and the object attained is further refined by precision.

There are some things which can be known speculatively and which cannot be apart from sensory matter and motion. Some of these things depend upon sensory matter and motion in order both to be and to be understood. These can neither be nor be understood without sensory matter, and so they are defined with reference to sensory matter, not indeed to the particular, but to common or general sensory matter. In the definition of man we include flesh and bones, but not this flesh and these bones, because in defining sensory things we abstract from the singular as such and consider the universal and essential. Things of this sort are objects of natural science or philosophy of nature.

There are other things which depend upon sensory matter in order to be, but which nevertheless can be understood apart from sensory matter, and so sensory matter is not included in

⁷ *Ibid.*

their definitions. Lines and numbers are things of this sort, and they are objects of mathematics.

There are things which do not depend upon sensory matter in order to be, but can be without matter, whether they are simply immaterial, for instance, a spiritual substance or a separated human soul, or may be either material or immaterial, as substance, cause, quality, being, potency, act, one or many. These are objects of metaphysics, that is, of a science beyond physics. These things must be investigated after physics has been acquired, because our knowledge proceeds from sensory things to the supra-sensible. There is nothing which is independent of matter in its being but dependent upon matter in order to be understood and defined, because the intellect itself is immaterial and can grasp the immaterial in terms which are immaterial. Hence there is no fourth kind of speculative science, but only three kinds.

Logic is distinct from the other sciences and does, indeed, pertain to speculative science, but rather as an instrument of speculation than as a principal part, because it provides the rational instruments required for speculation. Logic and mathematics are both speculative sciences and liberal arts. They perfect us not only in knowing but also in making, yet their work is a work of reason itself, as in the formulation of arguments, geometrical construction, measuring, numbering, composing melodies, computing the courses of the stars. Other liberal arts are directed to the work of the imagination, such as poetry. Medicine, agriculture, etc., are technical arts, not speculative sciences. The moral sciences are neither speculative nor technical, but practical. They are ordered to operation, but this operation is an act of moral virtue or right choosing, not an act of knowing or making. Although the moral sciences are not arts, still the moral virtue itself takes the place of art, and may be called the art of right living, because its act is the principal thing in moral matters, wherein knowledge counts for very little. Natural science and metaphysics have no work at all, but only consideration of the truth, at least as the term of study.

PHYSICS

It is clear that we do not make natural things such as elements and compounds, plants and animals, and so our knowledge of these things is speculative, not operative. Even the so-called synthetic elements and compounds are really produced in some unknown way by the action of a natural agent, not by human art, which merely brings the natural reagents together so that they can act one upon another.

But is there only one natural science, or many? And is mathematics really distinct from natural science? The fact that natural bodies have points, lines, surfaces and volumes which are of interest to both the physicist and the mathematician seems to indicate either that there is no distinction between physics and mathematics or that one is part of the other. Moreover, the marvelous growth of modern science and the development of many specialized researches seem to indicate that there are many distinct sciences of natural things.

Yet when we realize that the naturalist as such desires to attain a scientific knowledge of natural things, and when we realize that the requirements for genuine science are very strict but not impossible of fulfillment, we may be disposed to see that there is and can be only one speculative science of natural things, and that this science is distinct both from mathematics and from mathematical physics.

Scientific knowledge is an orderly understanding of things through their principles, causes and elements. A single science has a single kind or genus of subject matter, which has its own basic principles and causes, and includes all the species within the genus,⁸ with all their proper principles, causes, elements, properties and relations.

It might seem that natural things comprise various genera, each of which could admit the development of a distinct science. For instance, there are the elements and the compounds; the inorganic and the organic bodies; plants and animals; inverte-

⁸ *1 Poster.*, c. 28.

brates and vertebrates; sounds and colors. Can there be distinct sciences of these various genera, or of others like them?

If the basic principles from which these things proceed and on which our knowledge of them depends are irreducibly different, then they pertain to different sciences.⁹ But if their basic principles are the same, then they pertain to the same science. Such is the case with all natural things. The basic principles on which colored things depend and by which they are intelligible are the same general principles on which sounding things depend, and on which living and non-living things, compounds and elements depend. All natural things pertain to one supreme genus, and the basic principles of all these things are the same general principles, just the basic principles of all geometrical figures are the same, namely, points and lines. All natural things are parts of one and the same sensory world; all are investigated by the naturalist for the single purpose of understanding the sensory world; all are intelligible and definable in the same manner, that is, with reference to common sensory matter. Therefore, there is and can be only one science of natural things as such.

Natural things are presented to us as sensory, changing, mobile things which have in themselves the primary and proper principles of their own typical motion and rest. The naturalist as such endeavors to determine the proper principles, causes, properties and relations of all natural things, and he investigates every natural change or process. All these things are intelligible and definable in relation to common sensory matter, that is, in the same minimum degree of removal from individual matter and motion.

The nature and extent of natural science is not determined by the special interests of particular naturalists. Natural science includes the special interests of all naturalists, and also the general principles and properties of natural things. These are often neglected by the specialists, or simply taken for granted, and sometimes they are even surrendered to the phi-

⁹ *Ibid.*

losopher or metaphysician. Yet these general truths about natural things are the proper and solid foundation on which all natural science rests, and on which the wealth of detail depends for logical unity and intelligibility. Nothing is perfectly intelligible save in the light of its first principles, and this is as true of a natural thing as it is of a geometrical figure.

The naturalist is concerned not only with the fundamental principles or natures of natural things but also with their sensory properties, because it is through the sensory properties of things that we come to know their natures and define them, and conversely we explain the sensory properties of things in terms of their natures. The sensory appearances of things sufficiently manifest the natures,¹⁰ and in relation to the natures of things natural phenomena are intelligible. Of course, we cannot grasp the natures of things as clearly and distinctly as we know mathematical essences, which are understood apart from sensory matter. Yet we do not say that the natures of things are hidden from us, but rather that they are manifested to us through their sensory properties and effects. The shape of the teeth, for example, is causally and ontologically related to the nature and behavior of the animal, and is intelligible in relation to the nature and the behavior. In like manner all the typical structures and functions of natural things have natural principles and causes, whether intrinsic or extrinsic, material, formal, efficient or final, all of which should be investigated by the naturalist. Hence natural science can and should extend to the ultimate species with all their typical properties and relations. In fact, it is this knowledge which constitutes the perfection of natural science, just as the rich variety of specific detail constitutes the perfection of the natural world.

In natural science we abstract only from the individual and incidental differences of things in order to consider all that is proper to the genera and species: their proper principles, causes and elements, their material and formal natures, their properties and relations. The naturalist employs chiefly the abstraction of the whole, because he is interested in the primary

¹⁰ *In Boet. de Trin.*, q. 6, a. 2.

natural units or wholes, such as horses and men: things which have their own principles and causes of their mobile being and observable behavior in themselves. He desires to understand these natural wholes according to their proper species, with their properties and interrelations, all of which are intelligible through their fundamental principles or natures.

The naturalist is interested not only in the essential parts and functions of things, but also in those which are regularly present even though not essential. The arms and legs of man are not essential parts, nor are they merely contingent parts. They are integral parts with important functions which are normally present and proper to the species. These are true physical properties of man, separable only by accident in particular cases, but required for the proper perfection of man and his operations. All the various types of natural things have physical properties such as these. Properties of this sort are groups of sensory accidents rooted in integral parts which are characteristic and distinctive of the various natural types, at least in the regular ways in which they vary according to circumstances. These properties are sufficient to distinguish many different types of things, and are usually considered to be signs and effects of specific differences. The only sufficient reason for their regularity is a constant, intrinsic factor which is called the specific nature. In some cases it is difficult even for the expert naturalist to distinguish a variety from a difference in species, but there are thousands of other cases which offer no such difficulty because of the clear differences in structure and function, e. g. the horse and the dog.

To say that there are only a few natural species and to hold that the many clearly distinct natural types are only varieties of a small number of species is to admit a host of regularly recurring and clearly different effects without a sufficient natural cause or reason. Natural causes are determined in their essential natures, and these are known through their effects. The sensory appearances of natural things sufficiently manifest their natures, and appear sufficient to manifest a great number of specifically different natures. The constant internal factor

by which the lion differs from the lamb is not a mere accidental difference, but a difference in specific nature which is manifested by different and regularly recurring physical properties.

Thus we see that the physical object is not especially abstract, and unlike the mathematical object is not called abstract. It is the natural whole considered in its essential nature apart from the individual and the merely incidental. This is the least abstraction required for theoretical understanding. Any knowledge which is less abstract is not speculative science, but may be operative knowledge, or mere sensory knowledge from which the universal has not yet been attained.

Our empirical and non-mathematical knowledge of the sensory appearances of natural things is scientific in the Aristotelian sense only inasmuch as it is related to the natures of things. Sensory accidents can neither be nor be understood without dependence upon their subjects, and proper accidents are rooted in the natures of things. Nor can the natures be known except as they are manifested through and defined by their sensory properties and effects. Experimental knowledge of natural things which is not related to the nature of things is not science in the strict sense, but at best is merely a dialectical scheme or construction.

MATHEMATICS

St. Thomas states that the abstraction which is employed in mathematics is that of the form.¹¹ This abstraction is based on the composition of the corporeal substance with its accidents. The substance or primary being is really distinct both from its quantity and from its qualities, sensory appearances and motion. The sensory accidents and motions depend upon quantity and upon the corporeal substance, and cannot be abstracted from them. But quantity does not depend upon the sensory qualities or motion; it is independent of sensory matter as such, although it does depend upon the substance. Hence

¹¹ *Ibid.*, q. 5, a. 3.

quantity can be considered apart from sensory matter and motion, but not apart from intelligible matter or substance. Quantity can be considered also without reference to actual existence, but with respect only to imaginable existence. Considered in this way quantity is the object of mathematics, and it is truly an abstract object. Like the object of natural science it is abstracted from the singular essence in a merely negative way, because we do not know the singular corporeal essence as such. Furthermore, it is abstracted from all sensory matter and motion and is referred to merely imaginable existence. The quantity which is considered in mathematics is not the common sensible quantity which is known through color, sound or the other proper sensibles, but is quantity considered without reference to the proper sensibles and as something intelligible and imaginable, at least in its principles and elements. The abstraction employed in mathematics is that of the form or part, not that of the whole, because the mathematician as such is not interested in the natural whole, but only in certain parts.¹² The mathematician as such considers quantitative parts and forms: lines, angles, figures, numbers and their relations of equality or inequality, similarity or difference, not natural wholes composed of sensory matter and form. The mathematical object is more abstract, more removed from sensory matter and motion, more immaterial and necessary than the physical object. Hence it is said to enjoy a higher degree of abstraction than the physical object, and indeed is simply called abstract, whereas the physical object is not simply abstract, but is the naturally mobile, sensory world considered as intelligible through its principles of sensory change.

The mathematical object has its own basic principles: points, lines, units. These are considered by the mathematician not as in sensory matter, but as abstracted or separated from sensory matter and motion, and as enjoying ideal or imaginary existence. Considered in this way quantities with their prin-

¹² *Ibid.*

ciples and peculiar properties and relations are intelligible speculatively, and their principles are irreducibly different from those of sensory matter and physical science. Hence pure mathematics is distinct from natural science.

Mathematical physics also is distinct not only from natural science but from pure mathematics as well. Natural things have measurable parts, and their motions and their active qualities, too, are measurable, at least indirectly. Hence besides natural science, which treats of natural things as such, that is, as naturally mobile and intelligible through their principles of sensory change, and besides pure mathematics, which treats of quantitative determinations as such, that is, as imaginable and intelligible through their own peculiar principles, there are also mixed sciences in which mathematical principles are applied to the measurement of sensory quantities. These sciences are similar to mathematics by reason of their principles and their means of demonstration, which are borrowed from mathematics. Yet they resemble physics also, because in them mathematical principles are applied to sensory matter in order to determine at least approximately the measurable aspects of sensory things whether natural or artificial. Because of the contingencies of sensory matter, these determinations are not so certain as those of pure mathematics. Modern mathematics is particularly adapted to these applications which are made in mathematical physics.

METAPHYSICS

In regard to metaphysics, St. Thomas speaks of separation rather than of abstraction. The important initial question is whether all beings are sensory and material or whether there are also immaterial beings. If all beings are material, then physics or natural science is First Philosophy, and there is no need for metaphysics.¹³ Sciences cannot be multiplied without sufficient reason, and there is no reason for a science if there is no subject matter for it. If the subject matter is lacking there are no special difficulties to be solved, and no special

¹³ *III Metaphys.*, lect. 6; *VI Metaphys.*, lect. 1; *XI Metaphys.*, lect. 7.

principles with which to solve them. The principles of a science are the principles of the things which are considered in the science, because things are and are understood through their principles. If all reality is material, then all questions about the whole must be solved by physical principles. They cannot be solved by mathematical principles, because these are not principles of the whole but of the part only. But if there are immaterial beings, then physics is not the whole story, nor even the chief part.

In physics we prove that there is an Unmoved Mover, and that the intellective soul is a principle of immaterial operations, and so we know that there are beings which are not material things. The metaphysical object is not attained by abstraction, and presupposes a preliminary separation or distinction of immaterial beings from material beings.¹⁴ After this we can grasp both in the unity of single concept of being, whether material or immaterial, which is intelligible through its own principles of act and potency, essence and existence, and having its own properties and relations, all of which are considered in their purely intelligible aspects as modes of being. This concept of being has objective validity because it is founded on the real distinction of material and immaterial beings. Because this aspect of things, namely, that of their very being, is purely intelligible and most removed from sensory matter and motion as such, it is often said to be most abstract. But this concept of being is not attained by simple abstraction, as the physical and mathematical objects are attained. By abstraction we understand things separately, and leave something out of consideration which, nevertheless, could be considered from some other point of view. But the metaphysician leaves nothing out of consideration. His is the view of the whole, of everything which is or can be, both material and immaterial, insofar as it is open to the human mind. His view is supremely universal, extending to everything without exception, but in an orderly and speculative way. He considers everything as

¹⁴ In *Boet. de Trin.*, q. 5, a. 3.

related to being, and under the aspect of being, not as mobile, nor as quantitative or operable.

If we grant the existence of beings both material and immaterial, then there is a valid foundation for the objective precision by which a sensory being is conceived either as naturally mobile, or as an extended unity, or simply as a being. Considered as a mobile being, man pertains to physical science. Considered merely as an extended unit, man pertains to mathematics. Considered simply as a being, he pertains to metaphysics. In this way the same thing can pertain to more than one science: it is the same thing really, although it is not considered in the same way, but in ways which are irreducibly different, because they exemplify basic principles which are diverse and which determine different speculative sciences.

This is clearly the doctrine of St. Thomas. He says that the physicist and the mathematician study the same things, but not in the same way,¹⁵ and that the metaphysician considers everything under the aspect of being.¹⁶

REPLY TO DIFFICULTIES

In view of this clear and moderate realism, we may wonder what is the source of all the confusion about abstraction and the division of the sciences. Confusion arises from many sources, some of which are merely verbal, while others are real. St. Thomas himself says that some philosophers did not understand the difference between abstraction and separation,¹⁷ and so they fell into the error of admitting that mathematical and universal things exist apart from sensory things, because they supposed that the manner of being must correspond exactly to the manner of being known.

Since the time of St. Thomas the problems concerning abstraction and the division of the sciences have been discussed

¹⁵ *II Physic.*, lect. 3.

¹⁶ *Proem. Metaphys.*; *IV Metaphys.*, lect. 5; *XI Metaphys.*, lect. 7.

¹⁷ *In Boet. de Trin.*, q. 5, a. 3.

from different points of view, and many new questions have arisen. It is sometimes asked whether the doctrine of Cajetan¹⁸ and John of St. Thomas¹⁹ is the same as that of their master. In particular, is the total abstraction of which Cajetan speaks the same as the abstraction of the whole of which St. Thomas speaks, and is formal abstraction the same as the abstraction of the form or part? The present writer thinks that these great teachers agree in these matters, but that they do not always speak about the same things, or from the same point of view.

St. Thomas speaks for the beginner in terms which the beginner can understand. He speaks of the physicist and the mathematician, and of the things which they investigate. He says that the physicist considers the whole, whereas the mathematician is not interested in the natural whole, but in certain forms or parts, and so employs the abstraction of the form. He says that the speculative sciences are distinguished according to the order of removal or separation of intelligible objects from sensory matter and motion, or application to these, as in mathematical physics. In physics we leave aside only the singular and the incidental as such, in order to consider the universal and essential aspects of natural things both in general and in specific detail. In mathematics we set aside sensory matter and consider quantity, not without its subject, and with its own basic principles through which its determinations, parts and relations are intelligible. He says that the metaphysical object is not attained by abstraction, but by separation, because it presupposes the knowledge of immaterial beings, which are not immediately evident to us.

The Thomistic commentators, for their part, often speak of the sciences rather than of the scientists. They speak of physics or metaphysics, and of mathematics whether pure or mixed, and they ask how the various sciences are distinguished. Their point of view is that of doctrine rather than that of discipline.

¹⁸ Cajetan, In "*De Ente et Essentia*," *Proem.* 1.

¹⁹ John of St. Thomas, *Logica II*, P. Q. XXVII. Art. 1.

They presuppose that there are different sciences, and they ask how these are specifically determined. They point out that we perform two conceptualizing processes, and that the second gives us an object which is more formal and more intelligible than the first. But they speak from the point of view of the knowable object rather than of the mental act. What they call total and formal abstractions are objects which can be known by different mental processes. These objects do not exactly correspond to those attained by the abstraction of the whole and of the form of which St. Thomas speaks. Every abstraction of the whole attains an object which may be called a total abstraction, but not every total abstraction is simply a whole, because things which are not primary wholes, for instance, the hot or the colored, the round or the square, may be taken as examples of total abstraction. Moreover, the abstraction of the form attains an object which is really distinct from other forms or parts in the whole, whereas a formal abstraction is an object of mental precisising, and is a formality which is not really but only virtually distinct from other formalities which are distinguishable in the whole.

The sciences are not distinguished by abstraction of the whole, as St. Thomas admits, nor by total abstraction, as Cajetan admits. St. Thomas says that they are distinguished according to the order of removal from sensory matter and motion. Cajetan says that they are distinguished according to the distinct modes of formal abstraction. What St. Thomas calls an order of removal from sensory matter attains to an object which Cajetan calls a distinct mode of formal abstraction. Within these different points of view and under these different vocabularies, we see an agreement in doctrine. In order to distinguish the sciences we must pay attention to the formality under which things are considered. This formality must present to the mind a distinct scientific object, one which admits of development into a distinct science.

The sensory world is the reality which is immediately evident to us. If we consider it as naturally mobile, that is, under the aspect of natural mobility, we attain a scientific object which

admits of logical (but not simply deductive) development from its first principles of natural motion to an explanation of the specific details of all natural things and processes. In this case we investigate sensory matter and motion in a speculative way, and we remove only from the singular and the incidental as such, in order to consider all that is proper and essential in common sensory matter or the universal.

If we remove not only from the singular but also from all sensory matter as such and consider things under the aspect of intelligible and imaginable quantity, we discover another scientific object different from that of natural science, namely the object of mathematics. Indeed, the mathematical object is twofold,²⁰ not precisely because there are two kinds of quantity (total abstraction) but because discrete quantity can be understood without considering the order of parts in space, and when considered in this way it is more immaterial, more removed from sensory matter (a higher mode of formal abstraction) than is continuous quantity as such, which cannot be or be understood without the order of its parts in space. A triangle, for instance, has three sides and three angles which are spatially related, and it cannot be understood without considering the order of its parts in space. But the number three can be understood without considering the spatial relations of its parts. Furthermore, the principles of continuous quantity as such are irreducibly different from the principles of discrete quantity as such, and each set of principles admits of development into a distinct science, namely geometry and arithmetic or algebra. Analytic geometry is an application of algebra to the objects of geometry, which is legitimate inasmuch as continuous quantity has numerable parts.

In order to attain the object of metaphysics we must have previous knowledge of both material and immaterial beings. The knowledge of immaterial beings is not attained by abstraction, that is, by the process of considering separately things which are really distinct and together, but by separation, and it is only after we know that there are such beings that we

²⁰ *Ibid.*

see the need for another science beyond physics. This knowledge enables us to grasp the formality of being as such (formal abstraction), that is, being whether material or immaterial, substance or accident, and gives us another scientific object with its own principles, which admits of development into the science of metaphysics. Thus we see that in spite of the difference in point of view and terminology, St. Thomas and his great commentators are in agreement concerning the division of the sciences.

But what about the modern problem? Why do so many modern writers disagree with the doctrine of the ancients? Perhaps it is because they presuppose that modern non-mathematical science of natural things is distinct from the philosophy of nature, and they are seeking to justify this presupposed distinction.

It seems clear that there cannot be a speculative and non-mathematical science of natural phenomena, in the Aristotelian sense of science, distinct from natural philosophy, because natural philosophy itself results from the minimum removal from sensory matter and motion, and because the principles of natural phenomena are the natures of things, and these are the proper principles of natural philosophy. Those who claim that non-mathematical science of natural phenomena is distinct from natural philosophy do not say that it is science in the Aristotelian sense. The fact that it is not science in the Aristotelian sense is not its glory but its weakness, because it is thereby restricted to merely dialectical constructions. Furthermore, to distinguish the science of phenomena—whatever this may be—from the philosophy of nature is to reduce this science to a mere fraction of its stature as conceived by Aristotle and St. Thomas, and as permitted by its own principles and proper methods. Through the sensory appearances of things, and only in this way, the specific natures of things can be known and defined. Without a detailed investigation of natural things such as is undertaken in modern science only a few general truths about their principles and properties can be known, whereas with the aid of modern experimental techniques a great deal

can be known and understood in a genuinely scientific way through the proper principles and causes of physical science. It is merely arbitrary to abbreviate natural philosophy, and to restrict it to a few general truths. It is unnecessary and unnatural to leave a gap between natural philosophy and natural science and by that very gap prevent the latter from being science in the strict sense of the term.

To distinguish the sciences it is not sufficient to point out the real distinctions between the substance and its accidents, between matter and form, essence and existence. A distinct science requires a subject with its own first principles through which it is intelligible in itself and in its parts with their properties and relations. The reason why there is a definite number of speculative sciences is because there are certain ways in which things are intelligible speculatively, distinguished according to the order of removal from sensory matter and motion, or application to these, by which scientific objects enjoying distinct degrees of immateriality are attained, or distinct modes of formal abstraction, which are intelligible through irreducibly different basic principles.

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ST. ALBERT AND THE THEORY OF ABSTRACTION

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IN thirteenth-century Europe the Platonic philosophical system, which had held sway almost uncontestedly from the time of Plotinus and St. Augustine, was challenged by its irreconcilable rival, Aristotelianism. While St. Albert is given credit for endeavoring to preserve and disseminate the writings of Aristotle, St. Thomas ordinarily receives all the acclaim for extricating the true Aristotle from the centuries-old accretions of neo-Platonism. That is, Albert, although he admired the Stagirite, was a Platonist at heart, or an eclectic, or one of those dreamers who hoped to synthesize a Peripatetic Academy. At any rate, he was certainly not the first of the medieval Aristotelians. This, in general, is the judgment historians of philosophy seem to have made.

While science has not yet devised a litmus paper for separating thirteenth-century Aristotelians from Augustinians, there are certain properties which are taken as characteristic of each. First of all, an Aristotelian will place a very miserly limit of one on the substantial forms any being may have; the Augustinian neo-Platonist generously concedes any number of forms. The Aristotelian reserves his hylomorphic theory for corporeal beings; the Augustinian extends it to all beings except the Divine. Although these two characteristics constitute the *binarium famosissimum*, the modern preoccupation with epistemology makes a third property perhaps even more important. Augustinians are divine illuminationists; Aristotelians are abstractionists.

It is with respect to this last criterion that we propose to examine St. Albert, to ascertain as nearly as possible whether his theory of knowledge was one of divine illumination or one of abstraction. Despite the fact that even a completely satis-

factory settlement of this problem would not of itself turn St. Albert into either a Peripatetic or an Academic, our investigation should serve to demonstrate to some degree how Academic a Peripatetic or how Peripatetic an Academic he was.

Even a cursory inspection of the available summaries of St. Albert's thought makes it evident that the interpretation of this philosopher is far from being something upon which everyone agrees or something about which anyone should presume to make many unqualified statements.¹ The quantity of material to be read, the difficulty of determining when Albert is simply expounding the thought of another and when he is setting down his own conclusions, and the present state of his works contribute toward making the study of the Albertine corpus difficult and not notably fruitful thus far with respect to any definitive interpretation.²

However, one can hope to attain some degree of certitude in investigating one minute phase of the problem. The question to be considered in detail, then, is St. Albert's attitude toward the theory of abstraction, and even more precisely, whether his abstraction theory accounts for all natural knowledge or whether he has recourse also to a theory of illumination.

The principal sources of information are St. Albert's paraphrase-commentary on Aristotle's *De anima*, the *Summa de creaturis*, the commentaries on Dionysius, and the *Summa theologiae*. That his *De unitate intellectus* and his *De intellectu et intelligibili* are not included is due to their seeming to contain nothing which clearly indicates an illumination theory—except insofar as the soul receives a natural light which enables it to perform abstractions—or which directly supports a theory that the natural light of the intellect is sufficient for all natural knowledge.

¹ See F. J. Thonnard, *Précis d'histoire de la philosophie* (Paris: Desclée et Cie, 1945), pp. 315-318.

² Perhaps Albert himself is not entirely blameless with respect to the state of the present Albertine studies, for, according to De Wulf, "Sa langue est inculte, souvent embarrassée et imprécise." *La philosophie médiévale au XIII^e siècle*, 2nd. ed. (Louvain, 1905), p. 320.

In *De anima*,³ the following subjects relative to abstraction are treated: the nature of universals, the distinction between *forma partis* and *forma totius*, the manner in which the soul is known, knowledge of mathematical and corporeal things, whether the soul has operations which are independent of the body, the soul as separable from the body, and the distinction between agent and possible intellects.

The Nature of Universals

If animal, as a universal, is anything of the quiddity of a particular and real animal, it must be posterior to the individual and not prior. The same holds good for anything common which is predicated of a being. That is, the (formal) cause of animal, which is the principle of this or that animal, is in the animal itself, and is particular and does not precede the particular animal in time, as Plato said. If it were true that the universal preceded the particular, then we could have knowledge of the particular only through the universal, as if natural things could be known only by knowing their causes.

Therefore, the nature—whether it is a form of genus or dif-

³ Just as it was formerly held that St. Thomas' own thought could not be sifted from his Aristotelian commentaries, so it has been objected that Albert, in his *De anima*, is simply setting down Aristotle's ideas and does not necessarily assent to them himself. However, the fact that Albert expounds in this work the theories of so many other philosophers on numerous questions and then proceeds to demolish their arguments, leaving only the Aristotelian position intact, would be very difficult to explain if Albert did not himself favor in each case the position of Aristotle. Secondly, a reading between the lines of *De anima* does not give the impression that this is simply an exposition of someone else's thought; and such expressions as *Haec autem ideo dico* (Lib. I, tract. I, c. 4; t. V, p. 123), do not lend themselves to such an interpretation. Thirdly, it was necessary that St. Albert choose among the various current interpretations of Aristotle, and his rejection of this or that interpretation is always based on truth rather than any textual fidelity. Finally, the writer has not been able to discover in the other works of St. Albert any contradiction of what is said in *De anima* relative to the abstraction theory, but rather, much that affirms or supports it. While the fact that St. Thomas, a student of St. Albert, held an Aristotelian view of abstraction is not a premise from which one can conclude that St. Albert held the same view, it does add some weight to the above reasons for taking *De anima* as a sincere expression of its author's own thought.

ference—which is in a particular thing *in esse naturae* is in that one thing and not in anything else. It is when the intellect receives the intentions of a being's essential principles (potency and act) and abstracts these intentions from matter and whatever else may individuate them that the intellect universalizes the nature. Therefore, the universal is posterior to the particular when it is taken as a universal; there is no truth to Plato's assertion that the universal precedes *secundum esse* all the particular beings which participate in it.⁴

Distinction between Forma Partis and Forma Totius

Just as Avicenna said, forms are of two kinds. One kind of form is that which is considered as the act of a thing and a part of its *esse*. This *forma partis* cannot be predicated of beings; e. g., it is not true to say that man is a soul. The other kind of form can be predicated, for it is the *intentio rei abstracta a re*, the intention of the whole being, the *forma totius*.

The specific *forma totius* is composite; it includes genus and difference, genus being as matter and difference as form. That is, genus is not matter, but is a *forma totius* abstracted, not from just any matter, but from the proper matter which is proportionate to the differential form. However, because the whole being is signified by the name of its proximate matter, genus can properly be said to be abstracted from the whole. For example, because man is signified as an animated sensible body, the generic form, animal, which is abstracted from the proximate matter (animated sensible body) can be said to be abstracted from the whole.

Et si proprie velimus loqui, dicemus quod (forma generalis) est abstracta non a materia, sed a toto, secundum quod significatur totum nomine materiae proximae: sicut si dicam significari hominem secundum quod est animatum sensibile corpus: sic enim est materia

⁴ St. Albert, *Opera Alberti Magni* (ed. Abbé Borgnet, 38 vols; Paris: Vivès, 1890); *De anima*, lib. I, tract. I, c. 4; t. V, pp. 123-24. The Borgnet edition has been used throughout because, although it is inferior to the Jammy edition, it has been more widely circulated and is, therefore, more readily available for consul-

proxima homini: et quod abstrahitur ab eo secundum quod sic significatur, est forma generis quae est animal. (This passage is interesting also as indicative of the Albertine relation of soul to body in man.)⁵

The Manner in which the Soul is Known

In some things the nature of the whole is more knowable to us than the parts, and the powers of these things more knowable than the acts or objects of these powers. This is true of corporeal things, which are subject to the senses. That is, we know, for example, the nature of fire as a whole, and through knowing the whole, we learn the powers of its parts, their operations and objects.

Certain things, however, which are not attainable by the senses, are hidden from us with respect to their substance and parts. Nevertheless, their objects are manifest to us; through the objects, we know the operations; through the operations, the powers. Finally, it is through knowing the powers that we are able to conjecture concerning the whole. In this way it is that we investigate separated substances and the human soul.⁶

Active and Passive Intellects

In those things which are spiritual and so not subject to our senses, there are two kinds of powers, active and passive. The active potencies are the makers of forms and the powers of movement. Such are the active intellect and the powers which move the heart and the organs of locomotion. The passive potencies, however, are receivers of forms, as are the senses and the possible intellect. The potency of an *active* power is caused by the essence of the form. Operation does not effect any species in such a power; rather, the operation is specified by the form of the power itself, just as we say that the oper-

tation. Lest the reader be annoyed at the somewhat awkward language of the above passage and what follows, let it be said that the writer has sacrificed elegance of style to exactness in stating neither more nor less than what St. Albert has said.

⁵ *Ibid.*, c. 7; p. 132.

⁶ *Ibid.*, c. 5; p. 125.

ation of light is to illuminate. Whenever an active power acts upon something which is its object, it imprints upon that object its own species and form; e.g., light in illuminating gives the species of light to those things which are illuminated. Passive powers, on the other hand, lack a *per se* species; their objects produce their species in them. For example, the eye has no species of color until a colored object changes it by impressing its own species upon the eye. For this reason, in considering passive powers we must proceed from object to operation and thence to the power itself.

If we take the example of light which St. Albert gives as an instance of an active power and translate it into terms of agent intellect and intelligible objects, we can conclude that the agent intellect makes its objects intelligible by "imprinting" upon them the "form" of intelligibility. That is, the agent intellect is not a *receiver* of forms, but a *maker* of them.⁷

Knowledge of Mathematical and Corporeal Things

In mathematics those things which are prior *in natura et re* are also more knowable; therefore, mathematical knowledge is most certain. In physics, however, frequently those things which are prior *secundum naturam et rem* are hidden from us; their accidents are more evident, and so we must begin our knowledge from what is posterior and proceed to what is actually prior. Therefore, the science of physics does not have in some cases the certitude of mathematics.

When knowledge begins with accidents, it is necessary that these accidents be *per se* knowable to us and proportionate to our senses, phantasy (*phantasia*), and imagination, for it is into these—sense, phantasy, imagination—that we first receive corporeal things. Therefore, whenever we are able to transmit the *ratio* of accidents into the phantasy and imagination, then we are able to abstract the *ratio* of the substance, the *quid est*, from the thing whose accidents have been received in the senses. It is through the knowledge of accidents, then, that we come immediately, not by way of demonstration, to a

⁷ *Ibid.*, p. 126.

knowledge of the corporeal substance to which the accidents belong. (Knowledge of the soul is not immediate, but mediate, for, as was seen above, we are able only to *conjecture* concerning the soul.)⁸

Whether the Soul has Operations which are Independent of the Body

An operation which is not in any motion or passion of any part of the body may yet be *inexplicable* without some operation which *is* in some bodily motion or passion. The understanding of sensibles and mathematical is such an operation; that is, one depending upon a bodily motion or passion for its explanation. Although such understanding is not completely explained by what occurs in the body, it cannot take place without the reception of sensible forms in the phantasy. The phantasy, it is to be noted, is in direct communication with the body inasmuch as its organ is a part of the cerebrum. The sense forms are impressed upon the *spiritus* (a very subtle kind of gaseous substance which permeates the body) and carried to the cerebrum.

It is possible that an incorporeal substance existing in the body as the act of the body should communicate with the body directly; this is true of the soul as the principle of vegetative and sensitive functions. On the other hand, such an incorporeal substance may communicate with what communicates with the body; such is the soul as the principle of the possible intellect. Finally, it is possible that such an incorporeal substance communicate with the body in neither way, that it have operations which are in no way dependent upon the body. This last possibility is fulfilled in the soul as the principle of the agent intellect.

To understand is an operation which is properly separated from the body, for it deals with what is simple and denuded of matter. Therefore, understanding is not explained by forms impressed upon any corporeal organ. Rather, it is a simple

⁸ *Ibid.*

mental concept without any *hic et nunc*, but always and everywhere the same.⁹

The Soul as Separable from the Body

There is nothing to make it impossible that a soul should be separated from the body with respect to certain of its parts, parts which are not acts of that body because they do not exercise vital actions in it as in an organ. Such separable parts are the agent and possible intellects. It is evident, moreover, that not only the intellectual part of the soul is separable, but the whole intellectual soul. This follows from the fact that the agent and possible intellects are the soul's natural powers and it is impossible that separated powers should flow from an essence which is conjoined with a body. On the other hand, it is possible that from what is essentially separated there should flow powers which operate in the body.

That the above reasoning is correct follows from the axiom that every superior power can do whatever an inferior power is capable of doing; for example, from the first mover, which is the most separated of all essences, there flows the *virtus motiva* of the first moved, and this *virtus motiva* cannot operate without a body.¹⁰

The Distinction between Agent and Possible Intellects

The agent intellect has two operations: to abstract intelligible forms, which is nothing but to make them simple and universal, and to illuminate the possible intellect, as light illuminates something which is transparent. It is necessary that the universal species, as long as it is universal, remain in the light of the agent intellect; even when it is received in the possible intellect, it must be received in the light of the agent intellect. Consequently, in any act of understanding, the possible intellect must be illumined with the light of the agent intellect.¹¹

⁹ *Ibid.*, c. 6; p. 128.

¹⁰ *Ibid.*, lib. II, tract. I, c. 4; p. 198.

¹¹ *Ibid.*, lib. III, tract. II, c. 19; p. 366.

Because the soul is a kind of reflection of the light of a separated intelligence, there will necessarily be in the soul the form of light and that in which the light is received. From this *esse* of the soul there flow two powers: the agent intellect, which is caused by the received light; and the possible intellect, which is caused by that in which the light is received. In these two, then, there will be a *perfecta substantia* which will always endure and not be corrupted through the death of the body.¹²

During life the possible intellect is in the process of becoming actualized by the agent intellect. As the possible intellect proceeds from potency to act, there is use of reminiscence (*conversio ad particularia quae sunt in phantasmatibus*), of sense, imagination, and phantasy. From sense, experience is received; from experience, memory; from memory, the universal. Once the possible intellect has knowledge it is called the *intellectus adeptus*, and then it no longer has need of the sensible powers of the soul, just as one who needs a carriage to travel to his country no longer requires it once he has arrived. (Avicenna's example.)

Therefore, we can say that the separated intellect, which already has intelligible forms and does not need to turn to anything other than the agent intellect and itself, has attained to truth, for that is most true which is denuded of matter and the appendages of matter (*figura, situs, et hujusmodi*). Matter, because of its privation and mutability, obscures the true *esse* of things.

The *intellectus adeptus*, then, which consists in simple understanding, is immortal and perpetual; in it there is no use of reminiscence or any sensible power. The intellect which uses reminiscence or some other sensible power is passible and mutable, and therefore, corruptible. However, considered not as a power of the soul, but as the soul itself, such an intellect is not corruptible.

Notwithstanding the corruptibility of the possible intellect, nothing is understood without it, for our knowledge arises from

¹² *Ibid.*, c. 18; p. 365.

the senses. Still, the possible intellect's understanding after death—when it has become completely actualized—is independent of the senses. Therefore, we cannot speak univocally of the understanding of the possible intellect in this life and after death; it is equivocal. To understand after a *habitus* of knowledge and with only a turning to the agent intellect is equivocal to understanding by receiving knowledge through experience and memory. The agent intellect is the form of the possible intellect, and these two are one as a composite, but with diverse operations.¹³

In the *Summa de creaturis*, two questions are especially pertinent: what makes an intelligible species intelligible and how God is known.

What Makes an Intelligible Species Intelligible

Everything which is intelligible is so because it has the simplicity of being abstracted from matter and the appendages of matter. (It is the matter of individuation, and not the matter which *substat universali*, from which abstraction is made: man is abstracted from *this* body, but not from body.)¹⁴ Moreover, we have no knowledge, *secundum naturam*, which has not in some manner arisen from the senses, either immediately or mediately. When we perceive sensible forms, such as colors, we *immediately* perceive that which is the subject of those sensible forms, but when we perceive such a thing as motion, we come *mediately* to a knowledge of an unmoved mover. That those who are blind and deaf are all but unteachable is evidence that we have no natural knowledge except that which is received through the senses.¹⁵

How God is Known

God is understood by means of sensibles (*ex causis quae faciunt phantasmata in anima*), but because He is infinitely

¹³ *Ibid.*, c. 19; p. 367.

¹⁴ *Summa de creaturis* (contained in tomes XXXIV and XXXV of the Borgnet edition), *Pars* II, q. 58, a. 1, sol.; XXXV, p. 501.

¹⁵ *Ibid.*

distant from such sensibles, He is not understood perfectly. We cannot even speak of God except by making use of secondary causes, which are illumined by the light of the first cause. (This illumination by the first cause seems to refer to the giving of intelligible forms to the things known, not to the knower.)¹⁶

The *Summa theologiae* discusses the cognoscibility of God through natural reason, and also the manner in which angels are known.

Cognoscibility of God

There are two kinds of knowledge of God: positive and privative. By positive knowledge it is known *that* God is and even *what* He is. Privative knowledge reveals what God is not. *That* God is is knowable *ex solis naturalibus*, and even *what* He is can be known in the same way, but imperfectly and confusedly, by an *intellectum lippientem*, a bleary-eyed understanding. We know God by a negation of limits; we know that God is an incorporeal substance which cannot be limited by genus, species, difference, or number. By privative understanding, we know that God is not a body, not measurable, not temporal, etc.¹⁷

Since this knowledge is on the natural level, God can be known by the wicked as well as by the good. If the good actually do have a better knowledge of God, it is attributable to grace:

Longinqua enim visione et confusa potest Deus cognosci a malis, propinquiore et minus confusa a bonis *per gratiam*, propinqua autem et immediata et non confusa cognoscitur per gloriam, a nullo tamen comprehenditur.¹⁸

In this present life, God cannot be known except through some medium, either the things of nature or grace.¹⁹

¹⁶ *Ibid.*, q. 56, a. 1, ad 5; p. 479.

¹⁷ *Summa theologiae* (contained in tomes XXXI-XXXIII of the Borgnet edition), *Part I*, tract. III, q. 14, *mem.* 1; t. XXXI, pp. 69-70.

¹⁸ *Ibid.*, *mem.* 2; p. 72.

¹⁹ *Ibid.*, q. 15, *mem.* 1; pp. 79-80.

Whether God is known through the things of nature, through grace, or through glory, the intellect must be illuminated. If this illumination makes possible the knowledge of natural things through which God is known, it is a natural light which illuminates. (This light is given to the possible intellect and appears to be the natural light of the agent intellect itself.) If the illumination makes possible belief in revealed truths, it is grace; if it enables the intellect to receive the beatific vision, it is glory.²⁰

Knowledge of Angels

In dealing with the question of how angels are known to men St. Albert considers the objection that man has no intellect except that which arises from phantasms. Since angels are not a source of phantasms, it would seem that man cannot know them. St. Albert answers that it is true that the understanding of things of nature and of mathematical arises from phantasms, but, if that were the only source of knowledge for man, he would never know divine things. (*Divina* seem to be separated forms and God Himself.) Now it is the very nature of the *intellectus adeptus*, also called the *intellectus divinorum*, to understand forms directly and not through phantasms, *sed in quantum elevatur in lumine agentis intellectus ad speciem luminis divini*.²¹ The *intellectus divinorum*, then, is capable of knowing angels despite their being non-sensible. However, as was noted above, man has no *intellectus divinorum* in this life, but only after the possible intellect has become completely actualized and the soul has been separated from the body.

If there were to be found anywhere in the writings of St. Albert any leaning toward an illumination theory of knowledge, certainly it would be found in the commentaries on Dionysius. It is impossible, however, to find any passage in these commentaries which is certainly indicative of a neo-

²⁰ *Ibid.*, q. 16, *mem.* 3, a. 3; pp. 110-111.

²¹ St. Albert, *Opera Alberti Magni* (ed Abbé Borgnet, 38 vols.; Paris: Vivès,

²¹ *Ibid.*, *pars* II, tract. 4, q. 14, a. 2, *particula* 4, *ad* 1; t. XXXII, p. 196.

Platonic or Augustinian theory of knowledge. On the contrary, there are more passages definitely expounding an Aristotelian abstractionist theory than one would expect to find in a work which is devoted to an exposition of mystical theology.

In the *De coelesti hierarchia* St. Albert again takes up the question of our knowledge of angels: Without divine revelation it is impossible to arrive at a knowledge of angels, for all our knowledge, according to the Philosopher, arises from sense. Therefore, our knowing does not extend beyond the proper or common sensibles, or those things which are sensible *per accidens*, that is, by being conjoined in some way to the sensibles. Our intellect is in potency only to what can be received through the senses, but it becomes capable of knowing spiritual beings through the addition of the light of grace or glory to the intellect's natural light.²²

The *De mystica theologia* yields many passages referring to a knowledge of God through divine illumination, but these must be interpreted in context; that is, they refer, not to any natural knowledge of God, but to that divinely infused knowledge of mystical contemplation: *sed cognoscimus quadam supernaturali cognitione sub quadam confusione*.²³ In such prayer God is not known *per se*, as a principle, nor *propter quid*, for He has no cause, nor *quia*, for He has no proportionate effect, *sed mens nostra suscipit quoddam lumen divinum, quod est supra naturam suam, quod elevat eam super omnes modos visionis naturales, et per quod venit ad visionem Dei, confuse tamen et non determinate cognoscens: et ideo dicitur, quod per non videre videtur Deus, scilicet per non videre naturale*.²⁴

The *Commentarius in Epistolam IX*, in distinguishing between theological and other kinds of knowledge, makes clear that St. Albert does not consider even the *principles* of reason to be infused by any kind of illumination other than that which follows upon the very nature of the intellect. That is, while the principles of theology are those of faith, principles

²² *De coelesti hierarchia*, c. 6, § 2; t. XIV, p. 143.

²³ *De mystica theologia*, c. 1, § 6, *dub.* 2, *ad* 3; t. XIV, pp. 834.

²⁴ *Ibid.*, c. 2, § 2, *dub.* 1; t. XIV, p. 840.

which are known through an infused divine light, the principles of reason are those which are known through the natural light of the agent intellect.²⁵

The same commentary is interesting as a source of St. Albert's theory of knowledge with respect to the knowledge of God by analogy. While analogical knowing is not the same as abstraction, it is a necessary adjunct to an abstractionist theory if man's natural ability to know God is to be safeguarded. The particular passage to be considered concerns St. Albert's answer to an objection against Scripture's use of symbolic language. The objector states that such language obscures the truth because the symbols are *sensible* things, and what is sensible cannot give knowledge of the spiritual.

St. Albert's answer is that such symbols do hide the truth inasmuch as they are sensibles, but inasmuch as they are *related* to spiritual beings, they manifest the truth. These sensibles are related to spiritual beings by an *inspectio* of similitude. This does not mean that the sensibles participate in some quality of spiritual beings, for corporeal and spiritual qualities are entirely different; nor does it mean that there is a proportion between the corporeal and the spiritual. What this *similitudinis inspectio* means is that there is a similitude of proportionality in which there are necessarily four factors involved. That is, one considers a property of some sensible thing in comparison with its act and then discovers a similar relationship existing between a property of some spiritual being and *its* act. For instance, a property of lions is a certain ferocity through which they overpower other animals which resist them; similarly, God, by His power, puts down the proud and those who resist Him. It is not to be concluded from this that either the power or the victorious act of God and of the lion have at all the same nature; rather, there is only the possibility of a certain comparison between them. As the power of the lion is to *its* victory, so the power of God is to *His* victorious act; there is, then, a *similitudo proportionalitatis*.²⁶

²⁵ *Commentarius in Epistolam IX*, § 7, ad 6; t. XIV, p. 997.

²⁶ *Ibid.*, § 1, C, ad 4; p. 989.

In summarizing St. Albert's position on the question of abstraction, the following conclusions seem warranted:

1) All natural knowledge in this life begins with sense experience.

2) The agent intellect, which is a *virtus* of the soul, abstracts the intelligible species from the phantasm.

3) When the possible intellect has been completely actualized by the agent intellect, the resulting *intellectus divinorum* is capable of receiving intelligible species without any sense mediation; but this complete actualization of the possible intellect does not occur before death.

4) Knowledge obtained through grace must be distinguished from purely natural knowledge; the former is not obtained through abstraction while the latter is obtained in no other way.

5) There is no illumination theory on the natural level, except insofar as the agent intellect enjoys a kind of illumination due to its very nature, one which makes it capable of abstracting intelligible species from sensible things.

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ARISTOTLE ON MATHEMATICAL CONSTRUCTIBILITY



THE cultural atmosphere in which Aristotle spent his studious years at the Academy and the early period of his independent thinking was characterized conspicuously by the prominent part mathematics played in the speculations and investigations of his contemporaries. Many of them were certainly known to Aristotle; and their discussions and inventions have doubtlessly deepened his knowledge of the exact sciences and influenced his mature views on the methods and the significance of mathematics. A proper interpretation of these views requires more than a superficial understanding of Aristotle's references to mathematics.¹ All these texts must be confronted for this endeavor with the scientific theories and practices of his time.

This is particularly important for a proper estimate of Aristotle's doctrine on the nature of mathematical notions. The problem to be discussed here is whether these objects are obtained by simple *abstraction* from the material world, or by

¹ Most of Aristotle's references to mathematics have been gathered by the late Sir Thomas Heath in a posthumous work *Mathematics in Aristotle* (1 vol. 291 pp. Oxford: The Clarendon Press, 1949). These texts are given in translation from the successive Aristotelian treatises, namely from the *Categories* to the *Eudemian Ethics*, with few comments and only a partial effort to correlate them or to expand their interpretation. Obviously, this collection was not meant to be published as it is now by its distinguished author. If Heath had been spared long enough, he would have enriched it with the type of scholarly commentaries one admires in the *Thirteen Books of Euclid's Elements* and in his other publications. As it is, this excellent work will prove most handy and inspiring to those interested in Aristotle's views on mathematics; for without it, they would have to search in the bulk of the Aristotelian Corpus for the significant mathematical passages at a great cost of time. As such, it is most valuable and proves to be worthy of the eminence of its author, for whose memory a fresh debt of gratitude will be owed by the historians of ancient Greek culture.

construction as required by the modern mathematician. This question is the more decisive as the traditional answer usually emphasizes abstraction, without giving much thought to the process of construction, and tends to cast reflections on the mathematical ability and acumen of the Stagirite as opposed to his master.

Now, Aristotle taught that extension and number are involved in sensible things, without being the stuff out of which these things are made; while Plato treated the formless space (*χρῶα*) as the material element or substratum of sensible things, as the stuff out of which they are moulded by the penetration into it of shapes which are like the numbers.² On the other hand, Aristotle separates from sensible matter those notions only which do not require it actually; while Plato abstracts from matter not only mathematical objects but also entities in whose very nature matter is involved. And finally, figures and numbers are not identified by Aristotle as they are by Plato; though both are aspects of quantity they are the objects of different sciences. Geometry deals with figures, that is, with continuous or extended quantity and arithmetic with numbers, that is, with discrete and unextended quantity. Aristotle goes even as far as to maintain that the specific postulates of either of these sciences cannot be applied to both.

Mathematical objects are obtained by the same process which results in the apprehension of the universals.

The mathematician investigates abstractions; for, before beginning his investigation, he strips off all the sensible qualities, weight and lightness, hardness and its contrary, and also heat and cold and the other sensible contraries. He leaves only the quantitative and the continuous, sometimes in one, sometimes in two, sometimes in three dimensions; and the attributes of these as quantitative and continuous also, as he does not consider them in any other respect. He examines the relative positions of some of the attributes of these, and the commensurabilities and incommensurabilities of others, and the ratios of others.⁴

² *Timaeus*, 50 C-52 A.

⁴ *Met.* 1061 a 28.

³ *An. Post.* 75 a 35-b 17.

This is confirmed by the statement that "the mind, when thinking the objects of mathematics, thinks as separate elements which do not exist separate. In every case, the mind which is actively thinking, is the objects which he thinks."⁵ Aristotle would even say that it is by a kind of induction from perceptual things that the universal notions of mathematics can be elicited and known. "It is possible to familiarize the pupil with even the so-called mathematical abstractions only through induction, because each subject genus possesses, in virtue of a determinate mathematical character, certain properties which can be treated as separate, even though they do not exist in isolation."⁶ Consequently, mathematical objects have no separate existence; they are not independent of and prior to experience. As they are abstractions suggested by physical objects, they cannot be found without them and they have not in themselves a source of motion and rest.

These views are obviously governed by a strong dependence upon sensible and logical evidence, and by an aversion to extrapolation beyond the powers of sensory perception. They lead to the doctrine that mathematical objects are characteristics of natural things, which have been merely separated from their context in the external world. For example, "geometry investigates physical lines, but not as physical."⁷ Hence, the objects of mathematics are not those of sense experience, but they have an adjectival existence as qualifying substances. Moreover, the figures or symbols used in demonstrations are for illustration only and do not enter as such into the reasoning. In short, the relation between mathematical objects and sensible things is one of cognizable difference rather than of factual separateness.

These remarks are amplified with references to figures and numbers separately. Thus the mind apprehends geometrical objects by applying its power of abstraction to actual bodies

⁵ *De Anima*, 431 b 15.

⁶ *An. Post.* 81 b 1.

⁷ *Phys.* 194 a 10.

whether terrestrial or celestial until the only qualities left are the quantitative and the continuous with their attributes as such. By removing the secondary qualities of the former and the capacity for motion of the latter, they are still left with their shape and size. These bodies can be considered then as nothing more than three-dimensional solids. We can proceed further and think in succession of plane sections of the solids, and of linear sections of the surfaces, though solids, surfaces and lines have no separate existence.⁸ An additional operation is needed in order to reach pure geometrical forms capable of definition, for a particular solid, surface or line is embedded in a particular extension; the abstraction of that particular extension is required before the form is reached.⁹ Only then individual differences vanish and all that remain are universals, which are the proper object of science.

With number the process of generation is slightly different, though fundamentally based on abstraction. While Plato conceives it as a combination of the limit and the infinite, Aristotle adopts the more conservative view of number as a collection of units, a discontinuous plurality. The notion of a unit is obtained by abstraction, and it has its foundation in the ontological character of the unity of being. Numbers are obtained by adding one unit to another, and then by adding one unit to the preceding number;¹⁰ so that number are nothing beyond the units of which they are essentially formed. For the synthetic, dynamic and formal conception of number, Aristotle substitutes the notion of a whole formed of partitive elements juxtaposed in succession. Hence he thinks of numbers as an integral and discontinuous quantity.¹¹ He does not follow the Platonic view of conceiving it as continuous and almost geometrical.

This essential distinction between figures and numbers is a particular elaboration of the Peripatetic philosophy and has a far-reaching result in another direction: it points to what may be called the *qualitative aspect* of mathematics. Many mathe-

⁸ *Met.* 1060 b 12.

⁹ *Met.* 1035 b 33-1036 a 12.

¹⁰ *Met.* 1080 a 30.

¹¹ *An. Post.* 76 b 10.

mathematical notions are defined qualitatively in the Aristotelian treatises: in the *Physics*,¹² the notions of contact, contiguity and continuity are defined in a positive way without any reference to number or measure. In the *Metaphysics*, we read that "a circle is a figure of a certain quality because it has no angles, which implies that a *differentia* of essence is a quality. This is one sense in which quality is called a *differentia* of essence, another sense is that in which immovable mathematical objects are qualities: thus numbers have a certain quality, for example, numbers which are composite and not of one dimension only."¹³ Such passages have been diversely interpreted by various commentators.

Yet, the attitude of mind they reveal is technically justified by the mathematical theories known to Aristotle's contemporaries. To be sure, the Greeks could have grouped together in a qualitative system a mass of mathematical properties they had discovered, especially in the field of geometry, if they had the help of an adequate symbolism. As it is, they were more interested in systematizing their geometrical and other discoveries, by combining qualitative and quantitative considerations. Subsequent generations of mathematicians continued to use this fertile method, which reached its highest fulfilment with modern mathematics. In fact, the success of the analytical and infinitesimal methods was such, that even capital projective discoveries by Ceva, Pascal and Desargues kept a marginal position until Poncelet laid the foundations of projective geometry. Meanwhile the Aristotelian attitude proved closer to facts in stressing the qualitative as well as the quantitative aspect of mathematics. Indeed, there is a deep filiation running right through the development of the exact sciences, which links together this Aristotelian point of view with what may be called *qualitative mathematics*, namely projective geometry, axiomatics, topology, theory of sets, modern algebra and mathematical logic.

¹² *Phys.* 226 b 21-227 a 20.

¹³ *Met.* 10020 a 35 sq.

These considerations throw some light on the epistemological approach to the real significance of mathematics. But the final determination of the Aristotelian views about the nature of mathematical objects demands a considered answer to the question whether or not they are constructible. Most of the quotations from the Aristotelian works about our knowledge of mathematics seem to imply that our mind draws its elements from experience, whereas the modern mathematician always constructs the notions and the systems which make up the science of mathematics. Yet, if one looks closer into the matter, one finds that Aristotle combines abstraction and construction in order to give to mathematical objects their being, their necessity, their coherence and their applicability to natural phenomena. For one thing, only the most general mathematical concepts, such as volume, surface and line or number are mentioned as results of abstraction. More technical concepts, such as squares, triangles, pyramids, cylinders or polygonal numbers would have been specified, if abstraction were the only operation involved in their generation. Consequently, though Aristotle asserts rightly that mathematical notions in general result from an abstraction from sensible data, this statement should not be understood to mean that all mathematical objects as such are obtained from experience by abstraction exclusively.

The mathematical practice in the Academy and in the Lyceum manifested obviously the constructibility of mathematics, and several Aristotelian texts prove that the Stagirite was aware of this fact and accepted it as a matter of course. None of the ancient texts referring to Greek mathematics hint or assert that the figures or numbers used or discovered were ever obtained by a simple abstraction. On the contrary, they entail that such mathematical elements were *imagined*, or *invented*, or *constructed* by giving to lines and surfaces in general, abstracted from experience, certain particular conditions imagined or stated in order to solve specific problems. The fact of the constructibility of mathematical notions is confirmed

by the canonicity of the proof by means of the ruler and the compass. Moreover, the treatment of the infinite obviously required processes of construction rather than exclusive abstraction; for there is no actual infinite in mathematics from which any specific elements could be drawn by simple abstraction. Finally, the systematic exposition of mathematics clearly entails factual processes of construction. Indeed, the theory of proof or demonstration required the *construction* of precise mathematical notions, by submitting the most general concepts obtained by abstraction to a set of hypotheses imagined for specific technical reasons.

In the *Posterior Analytics* (I, 2 and I, 10), Aristotle says clearly that the definitions of such primitive notions as surfaces and lines, even of such technical concepts as straight lines or triangles or definite combinations of lines and surfaces, are justifiable only with reference to an *hypothetical existence*. Furthermore, all the other concepts obtained with the help of the primitive notions *must be proved to exist*. Now, both the proof of existence and the hypothetical existence entail a construction in all cases, and this construction may be either a mental or a technical combination of elements.

It is by demonstration that we prove the existence of everything, save being itself. . . . That a thing exists is matter for demonstration; and this is the actual practice in the sciences. What a triangle is, the geometer assumes; but that it exists, he proves. . . . The fact is that definitions do not include any proof that the thing defined may exist, or that it is the thing of which they claim that it is the definition. It is open to anyone to ask why it is so.¹⁴

The same view is expressed in other passages. Thus, "we must assume of a triangle that it means a certain thing, whereas of a unit we must know both what it means and that it exists."¹⁵ More precisely, we are told that

the things peculiar to the science, the existence of which must be assumed, are the things with reference to which the science investigates the essential attributes, namely arithmetic with reference to

¹⁴ *An. Post.* 92 b 12.

¹⁵ *An. Post.* 92 76 b 5. 71 a 11.

units and geometry with reference to points and lines. But, with regard to their essential properties, what is assumed is only the meaning of each term employed; thus arithmetic assumes the answer to the question what is "odd" or "even," a "square" or a "cube," and geometry to the question what is the "irrational" or "deflection" or the "verging." But that there are such things is proved by means of the common principles and of what has already been demonstrated.¹⁶

Now, the usual way of making a demonstration forceful was the construction of the notion in view; this was the actual practice in Greek mathematics, which Aristotle knew well and which he must have taken for granted. To be sure, Aristotle could not think that abstraction alone sufficed to establish mathematical notions as such. This is plainly indicated in this text: "It is clear that even if it had been possible to perceive by sense that the triangle has its angles equal to two right angles, we should nevertheless have looked for a demonstration, and we should not have possessed knowledge of the fact as some assert."¹⁷ For an explicit mathematical truth, Aristotle refers explicitly to demonstration and not to abstraction.

With regard to the interpretation of demonstration in the sense of mathematical constructibility, three texts may be quoted most effectively. One is given in the *Physics* (II. 9) where Aristotle illustrates a certain resemblance (not an identity) between the necessity in mathematics and the necessity governing natural phenomena. "Given that the 'straight' has such-and-such a character, it is a necessary consequence that the angles of a triangle are together equal to two right angles. But it does not follow that given the latter (assertion), the former is necessarily true; we can only say that if the triangle has not the property in question, the 'straight' as we understand it does not exist."¹⁸ The second text comes from the *De Caelo* (I. 12), where Aristotle discusses mathematical truth with reference to an hypothesis. "It is impossible, if certain assumptions are made, that a triangle should have

¹⁶ *An. Post.* 76 b 5.

¹⁷ *An. Post.* 87 b 35.

¹⁸ *Phys.* 200 a 15.

its angles together equal to two right angles; or that, on certain assumptions, the diagonal should be commensurable.”¹⁹ These remarks are corroborated and expanded in the third text, taken from the *Eudemian Ethics* (II. 6), where Aristotle insists on the relativity of certain principles and in particular of mathematical hypotheses.

Immovable principles such as those of mathematics do not possess absolute authority (τὸ κύριον), although they are admitted as having similar force. For even in mathematics, if the principle were changed, almost all the propositions proved by it would be altered; whereas, if one of these is destroyed by another, they will not all be changed mathematically unless by the destruction of the hypothesis and the proof by means of that. Now . . . if because a triangle has its angles together equal to two right angles it necessarily follows that a square has its angles together equal to four right angles, it is manifest that the fact that the triangle has two right angles is the cause of the other proposition. Whereas, of course, if the triangle changes in this respect, so must the square. If the sum of the angles is equal to three right angles for the triangle, then it will be six for the square; if four, then eight. On the other hand, if the triangle does not change but has the said property, so must the square have the corresponding property. The necessity of the inference, which we are trying to show, is clear from the *Analytics*; at present it is not possible either to omit reference to it or to treat it with precision, except to the extent indicated.²⁰

Taking all these texts together, one notices that they insist mainly on the necessity of the inferential process rather than on the relativity of the mathematical principles. Nevertheless, the incidental reference to such a relativity and the significant examples given as illustrations, add their weight in favor of the constructibility of mathematics. For if mathematical notions were the results of abstraction alone, there could not be any relativity in their apprehension or in their meaning.²¹

¹⁹ *De Caelo*, 281 b 3.

²⁰ *Eud. Ethica*, 1222 b 23 sq.

²¹ We might draw attention to the unconscious prophecy entailed in Aristotle's view on the relativity of some properties of the triangle. At the time when he wrote his remarks, he could not foresee however dimly the possibility of a non-Euclidian geometry as the best factual illustration of his doctrines.

Furthermore, there are no real mathematical objects to which abstraction could be applied simply; there are no squares, no cylinders, no actual polygonal numbers in nature, to induce the mind to separate their essence from empirical data. We can only experience things having certain familiar mathematical forms; but these forms are seldom if ever identical with their mathematical definitions. It follows that mathematical objects and mathematical truths require the basic process of construction as the additional and unavoidable operation which gives them being, necessity, and a definite position in the orderly exposition of a systematic science.

If Aristotle had been against this practice of construction, which was current with the mathematicians of his time, he would have said so undoubtedly. On the contrary, his doctrines imply this process as a matter of course. Their flowering and most convincing illustration came with Euclid, who always constructs the notions required before using them in a demonstration, though he may have defined them previously in accordance with the Aristotelian theory of proof. Thus, the *Elements* use straight lines at right angles to one another only after the construction (I. 11, 12) of a perpendicular to a straight line. Similarly, the square which is defined in *Def. 22* is used only after its construction (I. 46). And the same remark holds for all the specific notions which make up the body of geometry.

It remains to say that there is no incompatibility whatsoever between abstraction and construction with regard to the resulting value of the mathematical notions. For construction is not arbitrary and absolute; but carried out with elements obtained by strict abstraction and with the help of exemplary causes suggested by the external world. That is why the perfect mathematical notions used by Greek mathematics can be applied effectively to natural phenomena; for these notions are always in potency in the external world which provided their elements. In other words, though there cannot be a perfectly circular object in nature, there are perfect circles potentially in the material world. The mind can abstract a useful but

imperfect notion of the circular from a circular object; but the perfect mathematical notion of the circle has to be constructed from empirical data stripped of their sensible matter, in order to fit into a systematic body of mathematical knowledge.

This interpretation of the Aristotelian texts concerning the nature of mathematical objects, coupled with the irreducible distinction between magnitude and number, result in the destruction of the ontological unity of mathematics which Plato tried to establish by means of his generalized conception of number. But Aristotle established the methodological unity of mathematics on the formal foundations of his theory of demonstration, which finds its justification in the ontological principles underlying his fundamental doctrines. Modern mathematics prove themselves to be closer to Aristotle's conceptions than to the Olympian intuitions of his master.

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BOOK REVIEWS

Metaphysica Generalis. By GERARD ESSER, S. V. D. Techny, Ill.: St. Mary's Mission House, 1952. Pp. 384 with index. \$4.00.

This book is a second edition, greatly enlarged and modernized, of Father Esser's now twenty year old work of the same title (*editio altera emendata et aucta*). In point of fact it appears to be entirely re-written. It is a thorough, substantial and workmanlike treatment of the broad and basic phase of scholastic philosophy that deals with reality in its most general, even transcendental aspects. This second edition takes an honorable place along with the several philosophical works that have already come from the scholarly and prolific mind of Father Esser. It is somewhat regrettable, incidentally, that these works have appeared in Latin, for their market is by that fact severely limited. Though intended "*ad usum scholarum*," the only schools they are likely to be used in are seminaries.

In his *Metaphysica Generalis* the author touches upon the matter traditionally treated in scholastic manuals on ontology. He does so, however, in a rather refreshing manner, with the touch of a master quite at home in a difficult field, quite well versed in modern attitudes, trends and developments—all this with the sure hand of a pedagogue long experienced in teaching. After a brief introduction to metaphysics there is the customary division of the book into the nature of being as such, its major modes, its transcendental properties, being as found in the predicaments (again with the usual restriction to substance, accidents *in genere*, and among the accidents *in specie*, quality, relation, action and passion) and finally the consideration of being with respect to its causes. This matter is dealt with in some twenty-seven articles, each of which concludes with detailed recommendations of pertinent collateral readings, including not only ancient writers, but modern and recent as well. These listings of authors to be consulted alone attest to the extensiveness of the author's familiarity with the field—borne out as well by the selected bibliography on metaphysical subjects set forth in the beginning and by the copious footnotes throughout. An extremely detailed table of contents as well as an index of authors and subject matter at the end enhance in great measure the usefulness of the book.

A few specific comments are in order. Very gratifying is the brief but sound resumé in the early pages of the book of the understanding of the notion of being by various modern and particularly recent schools of thought (including idealism, pragmatism, empiricism, neo-positivism, phenomenology, neo-realism, Bergson's philosophy of action, Heidegger's exist-

entialism and Jasper's philosophy of existence). The author is to be heartily commended for his introduction of a treatment of the prime principles of being immediately after the consideration of the notion of being itself. Where more naturally should such principles as those of contradiction, identity and the excluded middle, be handled than at this point? Yet one finds so often manuals of metaphysics where these principles are relegated with appendix-like detachment to some other part of the structure or else—worse still—completely excised so as not to be found in metaphysics at all!

It is good, too, to find one's attention directed early in the book to the consideration of mutable and immutable being, potency and act, especially the principle of the limitation of act by potency—all this before taking up the question of the relations between essence and existence. So many authors plunge into the consideration of the distinction between essence and existence without having touched upon the potency-act couplet and the limitation of act by potency. In such cases they find themselves using terms and arguments that presume the knowledge of the relations of potency and act or they omit the most cogent arguments for the real distinction between essence and existence drawn therefrom. Father Esser has prepared the way in orderly fashion for the consideration of essence and existence by his introductory article on mutable and immutable being. It is, however, for this reason that it is something of a disappointment to find that he has failed to make capital of this more acceptable order; for he has given a strange Suarezian twist to the Thomistic principle that act cannot be limited save to the extent that it is received into a passive potency by the surprising statement: “. . . *non . . . requiritur ut actus a suo subjecto realiter distinguatur sed sufficit praecisio objective adequata*”! (p. 85) This statement certainly nullifies St. Thomas' understanding of the principle as connoting a real distinction between the act and the intrinsic passive limiting co-principle. Small wonder that in Father Esser's viewpoint (again following Suarez) the argument for the real distinction between essence and existence drawn from the limitation of act by potency should lose its force. (cf. p. 112) It is this reviewer's opinion that in this matter of the distinction between essence and existence the author has not done full justice to the Thomistic arguments for the reality of the distinction and indeed has omitted some of the strongest arguments (such, for example, as are found in *Quodl.* II, q. 2, a. 3; *Quodl.* III, q. 8, a. 20; *Opusc.* LXII, *In Lib. Boetii de Hebdomad.*, Vivès, Vol. XXVIII, p. 471 b). At any rate it is rather strange to find in a book that is presumably Thomistic (cf. author's preface, p. iii: “*Ipsa (doctrina) . . . est metaphysica thomistica . . .*”), the following statement: “. . . *distinctio realis inter essentiam et existentiam rei contingentis . . . argumentis evidentibus non probatur.*” (p. 114) A final point in this regard: the author's use of the expression *distinctio metaphysica* as opposed to real distinction is rather

confusing. It seems unfortunate to use this expression to describe that kind of logical distinction that goes by the traditional term *distinctio rationis ratiocinatae major*. (cf. p. 151) If metaphysics deals with real being, then it seems the term metaphysical ought not to be used to describe a merely rational or logical distinction.

Disconcertingly enough the same expression is used later on when he sets forth the view (which he himself finds quite attractive—and here again one notes the predilection for Suarez over St. Thomas) that accidents are not really distinct from substance (cf. p. 249: “*In hac igitur sententia accidens a sua substantia metaphysice differre dicitur*”). Here in this connection he quotes with apparent approval—certainly with no adverse comment—the statement of Descartes that whatever is real can exist separately from every other subject, that the only thing that can so exist is a substance, not an accident, and consequently “*omnino repugnat dari accidentia realia*.” (cf. p. 249—and footnote 115) Presumably then, separability is necessarily required for real distinction (a view that is exceedingly questionable, if not definitely false). Presumably too, contrary to St. Thomas’ insistence that in the Eucharist the accidents of bread and wine do not cease to be accidents in transubstantiation, the quantity of bread and wine must after consecration acquire substantial stature!

The author thinks there is additional support for the denial of the reality of accidents as distinct from substance in what seems to be the finding of modern science that inorganic bodies are in motion (something generally understood to be accident) with physical necessity. (The reference here is undoubtedly to the theory that electrons are constantly revolving in orbits about their atomic nuclei). From this “data” of science the author concludes: “*unde motus est proprium corporum naturale*,” (p. 248) and, we are to gather, hence cannot be an accident that is really distinct from the corporeal substance. Apparently, then, if a characteristic necessarily flows from a being’s essence and so is related to the latter as a *predicable* property, it cannot be an ontological accident. Is it possible that Father Esser is confusing the *predicable* of *accidens* with an ontological accident? Can it be that because something is not a predicable accident (that is, related to its *logical* subject by way of the predicable accident) it cannot be a predicamental ontological accident? There seems to be an obscurity of thought here that is regrettable.

It should be clear that this attitude towards accidents *in genere* with the denial of their real distinction from substance affects the author’s understanding of accidents *in specie*, particularly quality and relation. Thus, in regard to quality, with more consistency than Suarez, who on the question of the distinction of potencies from substance at least here admits the reality of distinction, the author declares the arguments are not sufficiently evident (cf. p. 260, 261); and in regard to relation he denies there is any reality to relation that is distinct from its foundation. (cf. p. 277 ff.) In

the light of what has been said thus far it is no surprise that the author disagrees with St. Thomas and supports Suarez in the matter of the principle of individuation as well. (cf. p. 227-235) The continuing surprise, however, is that this purports to be a work on Thomistic metaphysics when, truth to tell, we find clear-cut abandonment of the Thomistic position on at least four major theses (cf. the twenty-four fundamental theses of St. Thomas, theses III, V, VI and XI.) There is definite consistency on these four points for Father Esser maintained the same position in these matters twenty years ago in his earlier work.

This reviewer has been curious to know what might have been the *emendations* introduced into this later work that justified its being called an "*editio altera emendata*." Two such changes occur to him, one relative to the principle of contradiction, the second relative to the principle of sufficient reason. Apropos of the principle of contradiction and its relation to the principle of identity, in the earlier work the author unequivocally asserted the absolute priority of the principle of contradiction, though he alludes to it as "*clarior et aptior enunciatio principii identitatis*." (1st edition, 1932, p. 37) In this later work the author assigns to the principle of identity a primacy over the principle of contradiction in the ontological, psychological and logical orders, though he allows to the principle of contradiction a primacy as a critical principle in respect to its own evident certainty and the certainty it affords other principles. (p. 47-48) In spite of the latter judgment he speaks unequivocally of the principle of contradiction as depending on the principle of identity, . . . *ideo principium contradictionis nititur in principio identitatis*."

The second striking difference between the two editions is in the treatment of the principle of sufficient reason. In the earlier edition we find the unqualified thesis: *Principium rationis sufficientis est analyticum et maxime universale . . . est objectivum . . . et metaphysice certum et necessarium*. (cf. pp. 256-257) In this later edition we find the opposite thesis unequivocally stated: "*Verumtamen principium rationis sufficientis neque esse universale neque per se ipsum evidens . . . probatur*." (p. 355 ff.) This is very confusing especially when the "proof" takes the form of rejecting the arguments which in the previous work were used to defend its analytic, universal and necessary character and which then appeared so evident. It hardly saves the situation to say that, while the principle is not "*per se ipsum evidens*," nevertheless "*evidentiam ex aliis principiis mutuatur*," (p. 358) the other principles being those of identity, contradiction and what the author designates (by an expression of his own coinage) as the "*principium rationis realis*." (cf. p. 99) By this latter principle he means nothing more than that the essence is the real reason (therefore, adequately accounts for, is the sufficient reason) for the properties that flow therefrom. (*ibid.*) The author recognizes that he is limiting the term "*ratio realis*"

to a special sense here and admits it is a species of a much more generic use of the term. If one investigates his explanation of this more generic use of "*ratio*" one finds it comes pretty close to what is generally understood to be the principle of sufficient reason as applied to the quidditative order. (*ibid*) At any rate it would seem more correct to say that the "principle of real reason" understood in this sense is a derivation or limited application of the much broader principle of sufficient reason. The latter then could hardly "borrow" its evidence from the former, as is maintained.

In neither of these cases is it clear to this reviewer that these changed attitudes towards the principle of contradiction and the principles of sufficient reason are emendations over the earlier views.

These observations are not intended to minimize the many excellencies of the book, the splendid marshalling of matter, the orderly presentation, the precise thinking and sound argumentation, the objective analysis of opposing opinions that it otherwise displays. It was felt necessary, nevertheless, to take special exception to those views that obviously depart from strictly Thomistic thinking. For while the major theses of St. Thomas have been merely *proposed*, not *imposed* (since it is philosophy, not faith which is concerned) in all Catholic schools of higher learning "*veluti tutae normae directivae*," according to the ruling of the Sacred Congregation of Studies, and while a man is free to disagree with them, still they ought not lightly to be set aside. And if they are set aside only after serious thought, then their opposite surely ought not to be proposed as "Thomistic" doctrine even in the sense (that Father Esser speaks of) "*quo ipse St. Thomas monet veritatem esse explorandam*." (*Praefatio auctoris*, p. iv) For while St. Thomas would indeed honor a man who differed with him with good but not convincing reason, even he would object to such differences being represented as his own under the specific description "*thomistica metaphysica*."

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Principles of Medical Ethics. By JOHN P. KENNY, O.P., Ph.D. Westminster: Newman, 1952. Pp. 221 with index. \$3.25.

The present century has seen a tremendous development in surgical and medical science and techniques. It is unnecessary to remark that all right thinking men must rejoice in any legitimate scientific developments which can bring relief to the many ills of suffering humanity. Unfortunately, however, not all modern procedures in the sphere of medicine and surgery have kept within the framework of the moral law and, to this extent, have not been truly scientific. For it is an irrefragable principle of the Christian

ethic that an end, however excellent and desirable in itself, cannot justify unlawful means and techniques of attaining it. So, to cite the obvious though often misinterpreted example: it is never lawful directly to kill the unborn child even when this is the sole means of saving the life of the mother. The modern development in the medical and surgical spheres has, therefore, posed new problems for the moralist. It is not that the moralist of today has to search out new ethical principles. The principles have been there from the dawn of human history: they are derivatives from the natural law which is the participation of the external law in the rational creature and is, accordingly, universal and immutable, reaching out to and governing the conduct of all men of all time. The task of the moralist today is to apply the principles of the natural law to the new factors. Or, to put it slightly the other way round, his task is to assess the new developments and techniques in the light of the old and perennial principles. These remarks have been to some extent suggested by the title of the work under review. The emphasis is on principles—*The Principles of Medical Ethics*. And that emphasis is good and timely. So many today think or seem to think or at least would like to suggest that an authoritative pronouncement—such as a Papal Address—on a point of medical ethics is a merely positive enactment of ecclesiastical law binding only on Catholics, whereas, in fact, it is an exposition of the universal and immutable natural law written on the fleshy tablets of the human heart.

In the past decade or so a fairly considerable literature on medical ethics has appeared and there have been many papal pronouncements on particular medico-ethical problems. All this indicates that there is a clamant need and demand for discussion and direction in this important ethical sphere. The subject is by no means exhausted. There is ample room for further elaboration and clarification. We welcome Fr. Kenny's book which, to our knowledge, is the most recent contribution in this direction. Though, inevitably, the ground covered is much the same as that covered by other present-day writers on medical ethics, we think that Fr. Kenny's book deserves a special word of welcome, for several reasons. His approach is fundamental, ordered and logical. There is an admirable emphasis on principles. The assessment of the various particular problems is sane and balanced and in general very fair to those who might, on controverted questions, prefer a conclusion other than that adopted by the author. The discussion is comprehensive. Very few medico-ethical problems are left untouched. Perhaps more than anything else we might single out for commendation the human and pastoral atmosphere which pervades the discussions. All ethical problems are essentially human problems but few lie closer to the heart of the human personality than those which arise in the medico-ethical sphere.

In the early chapters Fr. Kenny sets out clearly the fundamental moral

principles which are relevant to an assessment of the particular problems of medical ethics. We should have liked to have seen there a more explicit reference to the concept of the human person—the concept which underlies the whole Christian ethical economy both in its individual and social aspects. The dignity, value and inviolability of the human person are vital considerations.

In his analysis of the morality of lying our author (p. 19) describes this sin as “an act of injustice by means of speech.” This notion is repeated on the following page. But surely, as St. Thomas points out, lying, *in se*, is opposed to veracity not to justice. While there may be lies which are unjust, pernicious lies, not all lying is unjust. Nor can we accept, nor would St. Thomas accept, the author’s facile statement that “a jocose lie . . . is not a lie at all.”

In the discussion of the nature of marriage we found some rather loose and confusing sentences. For instances (p. 57): “The consent must be absolute; i.e. the parties must not stipulate any condition which would affect the validity of the marriage.” But conditional consent may be given in certain circumstances. The law allows it and provides for it. (cf. canon 1092) In the next sentence of our author’s work we read—and he is dealing with the requirements for a valid marriage—that “this contract must be externally manifested by word of mouth and clearly pronounced.” But verbal expression of consent, and still less clear enunciation, are not necessary for validity. (cf. canon 1088 § 2) Again we read (on p. 58) that “the Catholic Church considers all marriages of baptized persons . . . not only valid but sacramental.” This is highly confusing. The correct statement is that “all valid marriages of two baptized persons are sacramental.” On p. 59 we are told that “some psychologists maintain that the function of the reproductive organs is not only to generate the ova and spermatozoa but also to secrete substances which impress male and female characteristics on all the tissues of the body.” We have two queries here: why psychologists? and why *some* psychologists? Is it not accepted biological teaching that the reproductive organs have an endocrine function? It is implied, in the principle stated on p. 72 and in the subsequent discussion, that every single refusal of the debitum to a spouse who seriously and reasonably asks for it is a grave sin of injustice. This is a hard saying and we would not accept it. Of course, the obligation to render the conjugal debt is grave *ex genere suo* and is an obligation of strict justice. On page 75 our author notes that some moralists maintain that a doubly vasectomised man is not impotent “because he is capable of carnal relations even though his semen is lacking the fecundating element.” The reference to the fecundating element is confusing and does not serve either side in the controversy regarding the potency of the doubly vasectomised. The reference suggests that other authors would require for potency the presence of the fecundating element in the ejaculate.

But this is not true. The semen of those who are recognized as merely sterile may be aspermatic.

We are not clear as to our author's use of the terms "direct" and "indirect effect." Does he completely identify a "direct effect" with one that is directly willed or intended, either as an end or as a means? In other words does the "directness" or "indirectness" of the effect depend entirely upon the act of will? We read on p. 114 that "sterilization is termed *direct* when it is intended as an end in itself, or as a means to an end. *Indirect* sterilization is the direct result of some action but follows indirectly from the act of will." These same terms, direct and indirect, are defined again later (pp. 131-2) in reference to abortion—but not quite univocally. "Direct abortion is that which is procured as an end or as a means to an end. Abortion is called direct when the operation is of such a nature that its purpose can only be the expulsion of the fetus. . . . Abortion is termed indirect when means are used which immediately and directly are ordained to some end other than the expulsion of the fetus but which may unintentionally and indirectly cause an abortion. . . ." It seems to us that the terms direct and indirect effects cannot be adequately defined merely in relation to the act of will which accompanies their causation. And when our author deals with abortion he appears to be with us. Pope Pius XII, in a passage quoted by Fr. Kenny on p. 118, describes direct sterilization as "that which aims at making procreation impossible." The phrase "aims at" refers to the *object* of the act rather than to the intention of the agent. We freely admit that this question of the definition of direct and indirect effects is difficult. We further admit that it will be relevant sometimes to invoke the intention of the agent but only when an action has two equally immediate effects. It is difficult to formulate entirely satisfactory definitions. Fr. Kenny has not overcome the difficulty. He seems to waver. But we hasten to add that this wavering does not in any way militate against the validity of his practical conclusions.

There remains, however, the rather distressingly elusive corollary regarding the liceity of punitive sterilization. On page 116 Fr. Kenny writes that sterilization, as a punishment for more serious sexual crimes, is not, in itself, unlawful; that since the State can inflict the capital penalty it may inflict the lesser punishment of mutilation. This is the old argument *qui potest plus potest minus*—the universal validity of which we would venture to challenge. Fr. Kenny does not, however, regard sterilization as a suitable punishment. He says (p. 117) that the Popes have been vehement in their condemnation of eugenical and punitive sterilization. And in proof he quotes a passage from the Encyclical *Casti connubii*. But in this very passage Pope Pius XI seemed to prescind from the question of punitive sterilization. "Public magistrates have no direct power over the bodies of their subjects; therefore, where no crime has taken place and there is no

cause present for grave punishment they can never directly harm or tamper with the integrity of the body either for the reasons of eugenics or for any other reason." Indeed, many writers who uphold the liceity of punitive sterilization make much capital out of this statement. Yet the Pope seems to have, implicitly at least, described punitive sterilization as a direct interference with bodily integrity. And if punitive sterilization is direct it would fall under the condemnation of the Holy Office which in 1931 declared that direct sterilization of man or woman, whether perpetual or temporary, is contrary to the natural law. Is punitive sterilization direct or indirect? Does it not, to use the words of Pope Pius XII, aim at making procreation impossible? What is the *object* of this sterilizing act? And even if we must make a gesture in this context to the intention of the State authorities in imposing sterilization as a punishment—must we not say that they intend to make procreation impossible, at least as a means?

We have queried a number of points in Fr. Kenny's work. But we would wish that our doing so should be interpreted as an expression of our belief that the work is a valuable contribution to the literature on medical ethics and of our hope that there will be further editions in the preparation of which the objections we have raised may be kept in mind. And if it is not unpardonable to end on a slightly facetious note we, of this eastern hemisphere, should love to know what the "skedger wegers" (p. 4) really are!

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Translations from the Philosophical Writings of Gottlob Frege. Edited by PETER GEACH and MAX BLACK. New York: Philosophical Library, 1952. Pp. 244 with index. \$5.75.

Mr. Geach and Mr. Black have rendered a signal service in translating and editing, and the Philosophical Library in publishing, these scattered fragments from the works of the great German mathematician, Gottlob Frege. For it was Frege who exercised a profound and decisive influence on men like Russell and Wittgenstein, and of whom it may be said that his was perhaps the most profound and seminal influence leading to the development of modern mathematical logic. And yet despite his greatness, essays such as these which are indispensable for an understanding of the semantical and even logical import of Frege's work, "have," in the words of the editors, "long been buried in various German periodicals (mostly now defunct)."

Nevertheless, merely bringing these essays to light, and even bringing

them to light in such remarkably clear and smooth translations as these, will doubtless not in itself guarantee that Frege will come to be readily understood and appreciated. For like so many great seminal thinkers, Frege is a man whose thought would seem to be quite as ponderous as it is important, and quite as crabbed and involved as it is suggestive.

Accordingly, in attempting to survey and appraise this somewhat difficult material, this reviewer wonders if it might not be illuminating, even if somewhat unorthodox, to try to bring out the contrast between Frege's notion of logic and some of the dominant ideas that might be said to be operative in a more traditional, Aristotelian type of logic. That such an approach is unorthodox may be seen from the fact that it is not Frege's own approach. Instead, his initial concern is with mathematics and with providing an adequate account of basic mathematical concepts; and it would always seem to be from some such point of departure that he moves on to logical and semantical questions. Thus in none of the selections here given does Frege attempt anything like a direct or developed account of how his view of logic differs from the traditional one.

Nevertheless, suppose for purposes of argument that we project a possible interpretation of Aristotelian logic and then consider some of the points of contrast between it and Frege's view of the subject. Thus on the Aristotelian view it might be supposed that logic is concerned with the tools or instruments of knowledge. Moreover, as the instruments through which the real comes to be known, logical entities such as concepts, propositions, and arguments are not held to be real in the same sense as that which comes to be known through them. They are mere beings of reason. Not only that, but they are wholly adapted to being of or about the real which it is their function to enable us to come to know. Thus through concepts, we are enabled to intend the "whats" or essences of things, through propositions the "whether" or existence of things, and through arguments the "whys" or causes of things.

Now in contrast to this sort of thing, one does not have to read very far in Frege's logical writings before such typically mathematical notions as function, argument, and value come starkly to the fore. In fact, one might say that it was Frege's desire to take just such fundamental, but loosely used, mathematical notions, give them a precise and accurate meaning, and then generalize them for use outside their original more narrowly mathematical context.

For instance, consider the notion of function. Frege uses the following mode of illustration to bring out what he means:

People . . . recognize the same function again in

$$2.1^2 + 1$$

$$2.4^2 + 4$$

$$2.5^2 + 5$$

only with different arguments, viz. 1, 4, and 5. From this we may discern that it is the common element of these expressions that contains the essential peculiarity of a function; i. e. what is present in

$$2x^3 + x$$

over and above the letter 'x.' (p. 24)

Turning, then, to the notion of argument, Frege tends to contrast this with function in a way somewhat analogous to the way in which content might be contrasted with form:

I am concerned to show that the argument does not belong with the function, but goes together with the function to make up a complete whole; for the function by itself must be called incomplete, in need of supplementation, or 'unsaturated' [*ungesättigt*]. And in this respect functions differ fundamentally from numbers. . . . We now see how people are easily led to regard the form of the expression as what is essential to the function. We recognize the function in the expression by imagining the latter as split up, and the possibility of thus splitting it up is suggested by its structure.

The two parts into which the mathematical expression is thus split up, the sign of the argument and the expression of the function are dissimilar; for the argument is a number, a whole complete in itself, as the function is not. (pp. 24-25)

Finally, as to the notion of value, Frege says:

We give the name "the value of a function for an argument" to the result of completing the function with the argument. Thus, e. g., 3 is the value of the function $2x^3 + x$ for the argument 1, since we have: $2 \cdot 1^3 + 1 = 3$. (p. 25)

Having thus introduced a certain order and precision into those current mathematical notions, Frege then proceeds to generalize them in such a way that not just numbers and their relations but also concepts and propositions can be understood and analyzed in terms of the notions of function, argument and value.

Statements in general, just like equations or inequalities or expressions in Analysis, can be imagined to be split up into two parts; one complete in itself, and the other in need of supplementation, or "unsaturated." Thus, e. g., we split up the sentence "Caesar conquered Gaul"

into "Caesar" and "conquered Gaul." The second part is "unsaturated"—it contains an empty place; only when this place is filled up with a proper name, or with an expression that replaces a proper name, does a complete sense appear. Here too I give the name "function" to what this "unsaturated" part stands for. In this case the argument is Caesar. (p. 31)

Moreover, if one wishes to know what the value is of such a function as "—conquered Gaul" for the argument "Caesar," the answer is simply the True, just as for the argument "Ghengis Khan," the value would be the False. Indeed, any functional expression which has for its value either

the True or the False is said to have the peculiar kind of value known as a "truth-value." Accordingly, on this basis any concept might be said to be simply "a function whose value is always a truth-value." (p. 30) For example, for the concept "being fat," the truth-value would be the True for the argument, "Falstaff," say, or the False for the argument, "Cassius, etc." Or again, a function requiring for its satisfaction or fulfillment not just one argument, but two or more, Frege would call a relation. For instance, for the arguments 3 and 2 respectively, a function like $x > y$ would have for its value the True.

In short, relations as well as concepts may be regarded as examples of Frege's generalized notion of mathematical functions. Likewise, when arguments are given for these functions, what one comes out with are presumably nothing more nor less than propositions possessing the values, True or False. Indeed, Frege's scheme of function and argument would appear to provide a device of analysis not only alternative to, but, as many would think, far superior to the traditional analysis of categorical propositions in terms of subject and predicate.

Nevertheless, when one reflects on the matter somewhat further, one begins to wonder whether these devices of function and argument are really adapted to serve quite the same function as the more traditional logical instruments of the concept and the proposition. For as we suggested, a concept by its very nature is ordered to the intention of the "whats" of things, just as a proposition with its structure of "S is P" is ordered to the intention of whether something is or of what it is. In contrast, just how or in what sense is the sort of thing which Frege calls a function ordered or adapted to the same purpose or purposes?

Thus when we ask what these functions do or how as functions they function, Frege's answer would seem to be that they serve as factors of combination or correlation that bring together diverse objects into an ordered unity or whole. (cf. pp. 12 and 112) Or again, he will liken his functions to elements of form or structure (cf. the passage quoted above from p. 24) within an ordered whole. And superficially it might seem that this is not so different from the sort of thing one encounters in Aristotelian logic. For certainly such a logic is a formal logic, and in the study of it one certainly does consider the form of the proposition or the structure of the syllogism or what not.

And yet the difference between the two types of logic begins to become apparent the minute one recognizes that the forms and structures of Aristotelian logic are intentional forms: *Through* them one comes to intend something else—e.g. through the form, "S is P," one comes to intend that something is thus and so in fact and in reality. But as for a Fregean function, when one asks just what one comes to intend through it, or through its use as an intentional instrument, there just does not seem to be any answer.

For one thing, Frege seems quite unaware that concepts and propositions might conceivably have different intentional functions to perform, the ones being ordered to the intention of essences, the others to that of existence. Instead, concepts are simply functions in the Fregean sense. That means that when completed by the appropriate arguments, they come to have truth-values for their values. But that the concept considered as an uncompleted function might have a different intentional use from the proposition considered as a completed function, Frege seems not to have considered at all. It is as if he were concerned solely with the correlating or unifying function of his so-called functions, to the complete exclusion of any intentional function that they might presumably have.

Likewise as further evidence of Frege's disregard of intentionality, in so far as this might pertain to his so-called functions, is the fact that he considers not only concepts to be examples of what he calls a function, but relations as well. But clearly, if a relation such as "greater than" can be a Fregean function, then such a function cannot possibly be an intention. For while a relation of one thing's being greater than another may well be something that is intended, it certainly is not anything that itself intends something else.

But finally and most decisively, in Frege's whole scheme of functions, arguments and values, there seems to be no recognition of any sort of distinction between logical entities considered as mere beings of reason and instruments of intention, on the one hand, and real beings considered as objects of intention but as not themselves intentions, on the other. Instead, they all seem to be regarded as equally beings or entities. (cf. Rulon S. Wells. "Frege's Ontology." *The Review of Metaphysics*, June, 1951.) True, Frege does make a sharp distinction between his functions and what he calls objects. Yet on closer scrutiny it becomes obvious that this is in no sense a semantical distinction between intentions and objects intended, but rather an ontological distinction, apparently between different kinds of entities. Not only that, but when Frege undertakes to state exactly what he means by "object," he confesses to being somewhat at a loss and finally comes out with a mere negative definition: "An object is anything that is not a function, so that an expression for it does not contain an empty place." (p. 32) In other words, a function is by definition something that is *ungesättigt*—i. e. "unsaturated" or not completed. Consequently, any expression for a function is bound to contain empty places—e. g. "—conquered Gaul" or " $x > y$." In contrast, an object is by definition simply the opposite of a function. But note that both are alike entities, nor is the one related to the other as intention to intended object.

Nevertheless in our effort to point up the contrast between the intentionality of Aristotelian logic and the lack of intentionality in the Fregean scheme, we have unhappily fallen into what to many may seem a serious

oversimplification. For Frege's scheme is certainly not without what would appear to be properly semantical categories, notably those of "sense" or "meaning" and "reference" (*Sinn* and *Bedeutung*). Just how, then, do these fit in?

In answer, it should perhaps be remarked first of all that Frege tends to think of the mathematician or logician as dealing with spoken or written signs ("expressions"). Nevertheless, as against the so-called formalists in mathematics, he insists that these signs or expressions are to be regarded as meaning or signifying real entities. For instance, function expressions signify functions, argument expressions signify real arguments or "objects," in Frege's sense. Accordingly, let us consider the simplest and most obvious type of such argument expressions, viz. proper names, or perhaps definite descriptions (in Russell's sense). Just how and in what sense do such expressions signify objects?

For instance, to bring the matter to a head, consider some of Frege's own examples. Thus suppose one says " $a = b$." Just how does this statement differ from the statement " $a = a$."? Or again, since what people call The Evening Star is the same thing as what they call The Morning Star, one can say, "The Evening Star is the Morning Star." But just how does this statement differ from "The Evening Star is the Evening Star"? Frege's answer is that every such proper name or definite description must be regarded as having both a sense or meaning and a reference. It is as if there were a kind of double signification here. For obviously, "The Evening Star" has a different sense or meaning from the expression, "The Morning Star"; yet both expressions refer to or designate the same thing.

Apparently, then, argument expressions are such as to have both a sense and a reference, whereas function expressions merely signify functions and nothing more. Moreover, since neither the meaning of an argument expression, nor its reference, may be regarded as *ungesättigt* or "unsaturated" after the manner of a function, one must conclude that neither meanings nor references are functions. But if they are not functions, then by definition they are "objects." In other words, the sense or meaning of an expression such as "The Evening Star" must be regarded as an "object" quite as much as its reference, although, to be sure, they are quite different objects.

Nor is that all. For just as an argument expression differs from a function expression in not being "unsaturated," so also a complete statement or sentence differs from the function expression that is a constituent part of it in not being "unsaturated." Accordingly, just as argument expressions have both a sense and a reference, so also whole sentences will have both a sense or reference. And what is the sense of such a whole sentence? One might say that it is simply the proposition, in so far as one may consider

the proposition to be a sense or meaning distinct from the oral or written sentence which has this meaning. On the other hand, when one asks what could be the reference of a sentence, Frege's answer is that its reference is its truth-value. And from this there follows the rather startling consequence that "all true sentences have the same reference and so, on the other hand, do all false sentences. From this we see that in the reference of the sentence all that is specific is obliterated." (p. 65)

Undoubtedly, this is a very remarkable set of conclusions that we are here presented with—remarkable both ontologically and semantically. For ontologically, what is involved would seem to be a truly amazing proliferation of decidedly queer entities. Thus we have already noted how Frege regards what he calls "functions" as being no less real entities than what he calls "objects." And now it would appear that these Fregean "objects" in turn comprise a most variegated assortment of entities. Besides the so-called references of proper names, there are also the truth-values of propositions. And alongside these, go the meanings or senses of both argument expressions and sentences, as further "objects." Nor do these items by any means exhaust this veritable grab-bag of "objects." (cf. Wells, *op. cit.*)

And on the other hand, semantically one gets the impression that despite its panoply of meanings and references this Fregean scheme has somehow left out any such thing as intentionality. Indeed, we earlier had occasion to remark on how Frege's functions never seemed to function intentionally. Instead, they were treated simply as things or entities, which, though they might serve to correlate or unify elements into a whole, were not themselves of or about anything else. And so here it would seem that somewhat the same thing had happened to Frege's meanings and references. It is as if his senses or meanings had somehow got hypostatized into actual "objects" or entities. And once they are thus set up as "objects," they don't seem to mean or intend anything or to be of or about anything; they just are. This accounts for the fact that the meaning of an expression is regarded as being one object or entity, and its reference as another; and one then has no idea what the connection is between them. Meanings and things meant, references and what is referred to, yes, even the different facets and aspects of the real that comes to be intended (e. g. essence and existence)—all these seem either to be confused with one another, or, if separated, to be hypostasized into so many independent and unconnected real "objects" or entities. In short, from the Aristotelian point of view, it would seem that in Frege's scheme there is no clear or adequate provision made for the all-important distinction between beings of reason, on the one hand, which function as mere intentions, and real beings, on the other hand, which are the primary objects of such intention.

Unfortunately, it may perhaps be thought that because of our concen-

tration upon Frege's notions of function and object and sense and reference, there is nothing else in this volume of selections worth noting. But such is not the case. For it is packed with all sorts of insights, analyses, distinctions etc. which have become the veritable common coin of much modern logical and semantical discussion—e. g. Frege's brilliant attack on formalism in mathematics, his suggestive treatment of negation as a function, his criticisms of the class calculus as a proper part of logic, his ingenious recommendations for the handling of modal sentences in indirect discourse. Also the editors of the volume call special attention to the last selection in the volume, in which Frege undertakes to deal with Russell's paradox. It is often said that Frege was completely non-plussed by this challenge from Russell. But this selection would appear definitely to establish the contrary.

Be all this as it may, the really dominant ideas in Frege, this reviewer feels, are those which he has discussed. Also he hopes that his contrast between Frege's general scheme and the Aristotelian logical scheme is not too wide of the mark. In any case, he would like to enter a plea that logicians in the Scholastic tradition address themselves to a serious study of Frege. Only so can the whole vast area of modern logic and semantics be made really intelligible. Indeed, to take but one instance, the current dispute that is raging between the so-called Platonists and nominalists in semantics has to be viewed as taking place entirely within an arena that was set and defined by Frege. One might even hazard the opinion that neither Professor Ryle nor Professor Quine, in their recent attacks on the "platonism" or the Fregean tradition, has really succeeded in breaking out of its confines. That is why it may be hoped that Scholastic thinkers, approaching this type of logic and semantics from what would seem to be a profoundly alternative position, would be able to come forward with something in the way of a really telling appreciation as well as critique.

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Errors of Psychotherapy. By Sebastian de Grazia. New York: Doubleday, 1952. Pp. 288 with index. \$3.00.

This book shows a considerable amount of information which, however, is not always digested; it contains a number of unreserved statements which will make some readers smile and others, especially psychiatrists, indignant. Some of the author's judgments border on superficiality; he writes well, but many a reader will probably find his poetical and visionary effusions a little unconvincing. He himself calls his book "fiercely partisan," and indeed the almost emotional tone of the book leaves one with the impression that the author seems personally involved in the issues he is dealing with.

The author considers his book a "lengthy polemic." The quintessence of his argument is the following. Mental disorder is moral disorder. But if that is so, the secular psychotherapist has no right to heal, because he has no knowledge of morality; neither can the religious therapist, the clergyman, claim authority for healing, because religious leaders "fear to practice forgiveness." Who, then, is entitled to help the mentally ill? Moral disorder is an estrangement from the community. This concept leads to a new theory of psychotherapy: the salvation of mankind to free itself from rampant mental disease depends on the social scientist. Social Science—the field in which the author works—should give us the therapist of the future.

This brief outline shows that the author takes a dim view of psychotherapy as it is practiced today and his view turns very dark when he speaks of psychoanalysis. Examining the various therapeutic schools and methods of the present and the past, he passes judgment on the psychoanalysts, the Adlerians, the followers of Jung and Stekel, the Rankians, the psychobiologists, the hypnotists, the counselling procedures, the therapeutic endeavors of primitive, ancient and medieval healers, the pastoral and confessional therapy of priests and ministers, and the work of quacks. He arrives at the conclusion that we have no reliable or trustworthy statistics to show which are the most successful therapies; none of these therapeutic endeavors work at all times and all of them, even the therapy of quacks and primitive medicine men, work sometimes. Since all score success at times, there must be some common elements in the various types of therapy. The elements which all of them somehow recognize are: neurosis is a moral disorder; the psychotherapeutic relationship is one of authority; the therapist gives moral direction. The author then sets out to analyze these common elements.

The backbone of his argument is that neurosis is a moral disorder. The author has an almost demoniacal concept of neurosis. Neurosis is the price of sin; people get sick because their conscience plagues them. According to the author, the moral concept of mental disease is supported by the conviction of the ancients and by present-day practice and theory.

The second common element is that all therapists speak with authority which the author defines as rightful power. This authority shows its effects in transference—which is the result of pre-existing authority and augments authority already existing.

The third element is that the therapist should give moral direction. However, here is where all modern therapists are at fault, according to the author. Secular therapists (all of them, the author seems to think) profess moral neutrality, calling moral what the patient feared was immoral. Especially psychoanalysis has turned much of existing ethics upside down; the analysts are the "new confessors" who consider nothing sinful. Because the secular therapists have accepted this theory of tolerance, they have not authority and have forfeited their right to heal.

Religious therapy has lost that right, too. What the patient needs is not tolerance, but forgiveness. However, the therapy of forgiveness is no longer found in religion. Protestantism, never having the authority to forgive, has embraced the theory of tolerance of the secular therapists. As for Catholicism, the author admits that confession could be an instrument of forgiveness, but feels that confession "even in the Roman Catholic Church is on the wane."

After having theorized in this manner, the author complains that "today there is no healing"—apparently forgetting that he conceded in the beginning of his book that all therapy works at times. Here is the author's advice on how to remedy this lamentable condition. Since the ultimate responsibility for healing rests with the community, the psychotherapist should be the representative of the community. The patient through his moral misbehavior has sinned against the community; therefore only its rightful representative can absolve him, because "forgiveness is the unique possession of the community." The community should set up schools and "councils of conscience"; the psychiatrist in charge of these councils should not be an M. D., but a consultant in adjusting procedures, an interpreter of reality who should not only absolve but also teach "what men's relations should be to each other." With such a procedure, if we are to believe the author, successful healing seems to be secured.

This is the author's vision of the future which may prove to be the future of an illusion. His book contains many sagacious remarks which the psychotherapists would do well to consider, but it is also full of generalizing, exaggerated, unsubstantiated statements, half-truths and downright errors. Basing his definition of psychotherapy on its etymological derivation, the author confuses healing of the mind with healing of the soul, *cura animarum* with mental care; he confuses mental and spiritual, natural and supernatural. One may say that confession is "essentially religious therapy," but that does not mean that confession, as instituted by Christ, is meant for the healing of mental disease. Sacramental confession forgives sin but does not take away all possible consequences of sin.

The author confuses religion with morality. And his concept of morality—"the ideal of right living"—is relativistic, because for him the ultimate judge for distinguishing between right and wrong is the community. Morality and what the author calls natural law change when the community changes. "What is immoral for one person may not be that for another. What is immoral is not the same for all men."

In view of such fundamental errors, it is questionable if this book is of much help to correct "the errors of psychiatry and religion."

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The Nature of Culture. By A. L. KROEBER, Chicago: University of Chicago Press, 1952. Pp. 447 with index. \$6.50.

The scope of this monograph can best be understood from the author's own words in the Preface (p. VII): "This book is an effort to put into one volume those papers and selected parts of my professional writings that might be of most general interest. . . . I have selected here only passages that bear on culture . . . those possessing some novel element of method or approach. . . . [The whole is my] theory about the kind of thing culture is: about its properties and typical manifestations, its relation to other kinds of things, and how it is most fruitfully viewed and investigated." This collection of writings represents the quintessence of the lifework of the dean of American anthropologists; it covers the last fifty years and consequently the development of modern anthropology in this country. These "fifty separate papers obviously cannot possess the continuity and overall organization of a systematically planned work executed at one time." (p. VIII) The essays are only loosely tied together by introductions and comments; some of them have not been published previously. But, nonetheless, from the whole series emerges a consistent theory of culture which provides a genuine norm for the interpretation of social and historical data. For all that, the task of a reviewer is not easy; he can only hope to point out the leading principles and the main facts from which they were derived.

The essays are grouped in five sections, the largest of which deals with the "Theory of Culture" in eighteen articles. In each of the five parts the order of selection is chronological beginning with the year 1901.

As is well-known, the author has dedicated his life to the study of the main problems of cultural anthropology, with preference given to the culture and languages of the Indians of California. Since this is the case, it is but natural that the manifold economical institutions, the development and grouping of the various types of culture complexes and cultural life, especially the social organizations and phenomena of these and other illiterate peoples have provided him with abundant material for his construction of the concepts of culture and culture life, of social structures and kin systems. He presents himself to the reader in the Preface of his book as a person who is "by nature a worker with concrete data." (p. VII) That means, among other things, that he has relied upon the evidence of the facts, without the *a priori* tenets of crass evolutionism which acted as a spell upon the majority of scientists some decades ago. As everybody knows, this now obsolescent theory supposes the necessary and unilinear development from lower to higher forms, from the most simple to the more perfect, *et cetera*. Dr. Kroeber himself in his *Anthropology* (New York, 1948; p. 6) describes that so-called "scientific" method as follows: "It became common practice

in the older anthropology to 'explain' any part of human civilization by arranging its several forms in an evolutionary sequence from lowest to highest and allowing each successive stage to flow spontaneously, without specific cause, from the preceding one. At bottom, this logical procedure was astonishingly naïve. In these schemes we of our land stood at the summit of the ascent. Whatever seemed most different from our customs was therefore reckoned as earliest, and other phenomena were disposed wherever they would best contribute to the straight evenness of the climb upward. The relative occurrence of phenomena in time and space was disregarded in favor of their logical fitting into a plan." Then he presents some "fair samples of the conclusions or assumptions of the classic evolutionistic school of anthropology of, say 1860 to 1890, which still believed that primal origins or ultimate causes could be determined, and that they could be discovered by speculative reasoning. The roster of this evolutionistic-speculative school was graced by some illustrious names. . . . Today [such methods of reasoning] are long since threadbare; they have descended to the level of newspaper sciences or have become matter for idle amateur guessing. They are evidence of a tendency toward the easy smugness of feeling oneself superior to all the past. These ways of thought are mentioned here only as an example of the beclouding that results from bad transference of biologically legitimate concepts into the realm of the history of human society and culture or viewing these as unfolding according to a simple scheme of progress."

In all his work of anthropological and sociological analysis—to be understood as of Cultural Anthropology or Ethnology—Dr. Kroeber has followed in this regard a real historical and unbiassed approach. Thus, in principle, he agrees with the anthropologists of the Ankermann-Graebner-Schmidt school of Germany and Austria, whose principles of anthropological or ethnological research have been made public in Fr. Wilhelm Schmidt's *Historical Method of Ethnology*, published in New York in 1939. In the first chapter of that book, an analysis of Dr. Kroeber's interpretation of the historical method and its results has been made accessible.

I want to emphasize that in evaluating the work of an anthropologist we must clearly distinguish between the method as such followed by him in his investigation or research on the one hand, and the real results which have been worked out by him with this method on the other. Obviously, the multiplicity of the cultural complexes of the many entangled social institutions, of the religious and mythological phenomena in the field of prehistoric man and actually existing primitive tribes—because of the incompleteness of our information, especially their origin and their coherence—still admits various interpretations. No wonder, therefore, that even the leaders of the Historical School of Cultural Anthropology do not at all agree in their valuation of many details. If a special branch of this school, under

the leadership of Father W. Schmidt, S. V. D. has been successful in grouping into "culture circles" (*Kulturkreise*) the immense diversity of culture types and cultural developments in the vast world of the illiterate peoples, this school has also always been aware of the fact that "culture circle" as such must be considered and used only as a working tool; similar to the concept of "culture areas" presented by Clark Wissler. New discoveries, precise information, more accurate analyses of the social systems and culture types will lead to a better grasp of their origin and significance, so that gradually anthropologists may be able to find out all the factors which have contributed to build up the whole of human culture and which have originated so many diverse culture stages.

It must be understood that humanity, from its first beginning, did not depend on, nor was it guided by the same laws of nature and instinct as is the whole animal kingdom. Even the first prehistoric man had the full use of all human faculties especially free will and intellect, which conditioned him to create adequate living manners and all regulations which the concept "culture" comprises. Many of the most important inventions have been made by prehistoric man or by illiterate peoples. But, denying the evolutionary theory, we insist on the fact that the unfolding of the human

culture was not and is not forced to an unilinear and necessary development: but, on the contrary, that many and manifold factors, visible and invisible, strong and insignificant, have worked unitedly and have contributed to new culture forms or culture types. The totality of human culture types—as we see it today—is the result of a very long process of evolution subject to continuous changes. Every culture type which has come into existence represents a harmonious complex of different parts. It is also an obvious fact that not all its sections develop simultaneously or in the same direction; i. e. one section may develop to a higher stage and others may retrogress. A very distinct example can illustrate easily what is meant. The technical or economical status of earliest primitive man was and is even today the simplest which can be imagined. He does not even use stone or metal for his tools and weapons, but his religious concepts as well as his moral laws and behavior belong to a higher level than that of many peoples in higher economical conditions. Such wonderful religious ideas as revealed in the creation myths of the Yuki Indians, discovered by Dr. Kroeber, have never been found in illiterate agricultural peoples. The Yuki with some other tribes in North-West Central California are ethnologically the oldest groups of natives in North America; they are still very primitive food-gatherers.

During the very long existence of humanity, of about 600,000 years, many peoples have disappeared without leaving any trace of their existence. The connection of the prehistoric man—who has left us so many findings, such as tools, art objects, magic articles, skeletons, etc.—with the actually

living tribes has very often been interrupted. The continuous evolutions of all sections of the manifold culture complexes followed their own way, and finally there is the total absence of written sources. These facts and many others make it understandable how difficult any analysis is.

The main characteristic feature of the Historical School in Cultural Anthropology is that it approaches the origin and evolution of the whole culture of humanity and especially of illiterate peoples exclusively by the same methods which the historians employ in their studies of the so-called civilized peoples. The Historical School does not make any other assumption than this one that, concerning the natural disposition of mental faculties, illiterate and civilized peoples do not differ in any essential way.

The anthropologists of the Historical School are still constantly at work, because not all phenomena and institutions of illiterate peoples have been sufficiently explained. For some facts—since Dr. Kroeber had mentioned them or analysed them—the Historical School is able today to present better explanations or more accurate descriptions. Every new discovery in the vast field of native life is a contribution for better understanding of the many factors which are active within each human society and have contributed to its rise and fall. Much serious work still lies ahead. It will not be easy to throw sufficient light on the origin and the first stages of the complex development of human culture. In any case this will only be possible if the research is based on the historical method.

Very recently at the Symposium on Anthropology of the Wenner-Gren Foundation in New York, from June 9 to June 20, 1952, the problems of the Historical Approach of Cultural Anthropology have been discussed by some eighty outstanding scholars, under the presidency of Dr. Kroeber. The results will be of highest importance for further anthropological activity in the whole scientific world.

Dr. Kroeber has followed the Historical Method for several decades with good success, and is responsible for its increased acceptance and esteem in American ethnological and sociological circles. This is one of the outstanding and lasting merits of our distinguished author. His credit is in no way lessened if some of his interpretations have been superseded by improved interpretations or more precise expression. Progress will always be the underlying law of unbiased scientific research.

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BRIEF NOTICES

Whitehead's Theory of Reality. By A. H. JOHNSON. Boston: Beacon Press, 1952. Pp. 276 with index. \$4.00.

Professor Johnson is no neophyte in the philosophy of Alfred North Whitehead. Since he knew the English thinker personally, he has devoted himself to the study of his philosophy of organism, and over many years given the readers of philosophy the fruits of his interpretation in many learned articles. The present work, which is the most complete and definitive available on the basic concepts of Whitehead, will certainly be the standard and classic text.

Doctor Johnson himself claims nothing more for his book than an introduction to Whitehead's theories on actual entities, but in this study he rightly sees the explanation of Whitehead's entire concept of reality. By his theory on actual entities, his interpreter shows in the first chapter, Whitehead hoped to reach and explain reality, but more especially to use reality as a norm for human experience, since he conceived philosophy not simply as a corpus of ideas and theories, but as a faithful mate for action. In the following two chapters, Professor Johnson derives from the words of Whitehead a summary of his theory of reality based on the doctrine of the actual entities. This summary is the product of many clarifications on the part of the interpreter, since Whitehead himself had no such clear notion, or at least never expressed it.

In this summary, the problem of the relation of efficient and final causes constantly emerges, though Dr. Johnson never seems to come to grips with it. He does indeed faithfully repeat that Whitehead combined these two causalities in any actual entity. The actual entity is striving for a purpose; such striving being an actual desire for an end, and, at the same time, an efficient cause is operating on the actual entity itself. But certainly there must be some relation between the aim of the actual entity and the end intended by the efficient cause if there is not to be a conflict. Doctor Johnson says that God arranges the eternal objects, but "God" and "eternal objects" remain elusive and vague concepts in both master and disciple. God, it is said, while an actual entity, yearns for some actuality. The word "some" modifying actuality indicates the vagueness of God's yearning. Which has priority—God or the subjective aim of the actual entity? Neither Whitehead himself nor his commentator provide a solution. Some readers might be tempted to provide their own interpretation from the Judaeo-Christian doctrine on Divine Providence. God gives each thing its own nature, and one of the properties of human nature is

the free will. However, such a proposed solution would contradict other phases of Whitehead's thought. And thus the problem of the relations between the actual entity, the eternal objects and God remains unsolved even by this very helpful commentator.

In the chapter on the mind, Professor Johnson says that Whitehead: "seems to reject personal immortality in the usual sense." (p. 77) An even more important problem for the psychology of Whitehead is the possibility of person even in this life. Although other types of philosophy might say that the fact of personality is so obvious that it needs no proof, Whitehead's theory of actual entities seems to make the continuity required for personality impossible.

The chapter on value sets out to consider truth, good, beauty, evil and morals, and while there is the usual vagueness and shifting meanings customary to Whitehead, Dr. Johnson's skillful analysis causes to emerge the supreme value in the philosophy of Whitehead. This supreme value is seen to be truth which is promoted to this position even as beauty is demoted.

In some ways, the seventh chapter, which is devoted to Whitehead's relation to other philosophers, is the most enlightening part of the book. Whitehead himself had the habit of imagining that his philosophy had affinities to many other systems, especially to those of Alexander and Bergson. Professor Johnson who undoubtedly knows Whitehead points out that these similarities to previous and contemporary philosophies are more apparent than real, and that Whitehead is unique. This chapter will certainly show the careful student of Whitehead the falsity of establishing philosophical forbears or brethren for Whitehead.

The last chapter of the book which contains the author's evaluation of the philosophy of organism comes as somewhat of a surprise. Although Professor Johnson in the earlier chapters is sometimes critical, he is always sympathetic, indeed to the point of conducting a defense. In this last chapter there is severe and devastating criticism, criticism which makes necessary a careful reconsideration of the rest of the book. Doctor Johnson in his final words does not hesitate to point out the contradictions in Whitehead's system. Even though Whitehead himself claims that no perfect system is possible, Johnson does not allow a disavowal of perfection as an excuse for many contradictions. However, he remains convinced in spite of his criticisms that Whitehead's philosophy is the hope of the century. The reviewer in the light of these criticisms as well as his own does not share such a conviction of hope.

In fact, the real Whitehead as revealed in these pages is somewhat pathetic, for Whitehead is a philosopher trying to explain nature with an *a priori* persuasion that there is no supernatural. Accordingly, while he does at times approximate a profound divine truth, he is not near enough

and his concepts of God and morality remain almost totally unacceptable. His interpreter is fond of stressing the humility of Mr. Whitehead. It is really a sad thing that this humility did not lead him to accept Divine Revelation, for, if he had, he might have made a great contribution to human thought and have escaped the fate of becoming in due time a footnote in the histories of philosophy.

De Poenitentia. By EMMANUEL DORONZO, O.M.I. Milwaukee, Bruce. I *De Sacramento et Virtute*, 1950. Pp. 560. \$7.50. II *De Contritione et Confessione*, 1951. Pp. 1044. \$10.00. III *De Satisfactione et Absolutione*, 1952. Pp. 742. \$10.00. IV *De Causis Extrinsecis*, 1953. Pp. 1208. \$19.00. All with indexes.

In his first publication in this series of dogmatic tracts, *De Sacramentis in Genere*, Fr. Doronzo set himself the task of exposing the theology of the sacraments according to the method of St. Thomas and under the guidance of his philosophical principles and theological conclusions. He noted rightly that the speculative character of theology must always be principal in theological endeavor. At the same time a balance of proportion can and should be struck with the positive studies and methods in this field. The constant and intimate adherence of Fr. Doronzo to the principles and method of St. Thomas together with the admirable proportion and subordination maintained between the speculative and positive functions of theology have continued throughout his subsequent works, *De Baptismo et Confirmatione*, *De Eucharistia* (2 vols.), and now with the completion of his most extensive tract, *De Poenitentia*. Besides ample employment of the sources of theology, faith, tradition and the teaching of the Church, a respect for the value of the positive side of theology is obvious and a major contributing source of the size of the printed tracts. Love for the teaching of the Angelic Doctor is evident in such elegant statements as that on p. 243 of vol. IV; "If in a matter of opinion one is permitted freedom to proceed, even with danger of erring, he will act with more prudence who tries to obtain the truth according to more certain principles, and it will be safer to err with St. Thomas than with six hundred other masters."

Fr. Doronzo has followed the traditional assignment of the sacraments to dogmatic theology. The current multiplication of manuals and vademecums, and the many significant pronouncements and instructions pertaining to the sacraments which have been emanating from the Holy See, create a tendency to consider sacramental theology as properly the ken of practical moral theology or of canon law. Nevertheless, in these volumes there is no neglect of the more important moral problems and implications, especially those still controverted by Catholic theologians. Particularly enlightening and useful for the student of the sacraments are the treatments of the

related Protestant and Orthodox theologies, extensively criticized in the volumes under review. The selection of theological sources is judicious and the assignment of a definite theological note to each conclusion is an invaluable guide. The clear outlines of materials to be treated, the bibliographies and indexes are distinct contributions and aids.

The tract, *De Poenitentia*, is prefaced by the one-time professor of the author, Fr. R. Garrigou-Lagrange, O.P. The latter singles out for commendation, among other points, the explanation and defense of the Church's penitential power and jurisdiction particularly with reference to Protestant notions. We might mention, in addition to the splendid treatment of satisfaction and merit in vol. III (p. 361 f.), another question which has received careful investigation by the author in several places in this tract.

In vol. I Fr. Doronzo clearly distinguishes the various theological opinions respecting the essential matter and form of the sacrament of Penance. He labels the opinion of Ballerini and his followers temerarious and the Scotistic opinion lacking any solid intrinsic probability. He censures some moralists for being too indulgent in their judgment of these teachings. (p. 175)

The absolution of unconscious moribunds, generally approved by modern moralists and involving the discussion above, is a question of the lawfulness of the present-day practice, since the validity is guarded by the conditional administration, as Fr. Doronzo states. In vol. IV (p. 598 f.) the author discusses at length the bases of this modern practice, very keenly setting forth the presumptions or probabilities which commonly underlie the theories attempting to justify it. However, in the difficult cases, e.g. of those who lapse into unconsciousness after refusing the last sacraments, it is quite hard to see how these presumptions or probabilities are more than possibilities, upon which one may not lawfully proceed to administer a sacrament. Fr. Doronzo promises further treatment of the question in his tract on Extreme Unction.

The dogmatic tract, *De Poenitentia*, is in the tradition of the Scholastic *summae*. The student of theology who is not acquainted with this comprehensive treatment of the sacrament of Penance denies himself the full breadth of view of the subject; the professor of sacramental theology will find among modern manuals no more satisfying source-book.

The Continuum of Inductive Methods. By RUDOLF CARNAP. Chicago: The University of Chicago Press, 1952. Pp. 92 with index. \$3.50.

This monograph is part of a two-volume work entitled *Probability and Induction* which is to comprise Carnap's researches in the field of inductive logic. The first volume of the set, *Logical Foundations of Probability*, has already appeared and the present monograph is to become part of the second volume. Within the total view that Carnap is offering in this

study, the work to be reviewed here has its own particular aim which can be given a brief, critical summary; other reviews are available for readers interested in the previously published parts of this study. (Cf. *American Journal of Science*, 249, June, 1951, pp. 459-62; *Journal of Symbolic Logic*, 16 (3), pp. 205-7.)

Carnap believes that there is rather general agreement on the nature and methodology of deductive logic which he accordingly leaves out of consideration, concerning himself only with inductive logic. The latter is negatively described as including all non-deductive forms of inference. What one expects of inductive logic is that it supply a method for determining the degree of confirmation (or probability in the inductive sense) of a given hypothesis on the basis of a given body of evidence. Two views of this problem of inductive logic and probability are distinguished. The first is the logical view, in which probability denotes a logical relation between two propositions or sentences, expressing the degree of confirmation or strength of support that is given a hypothesis by a body of evidence. In this sense, probability is a quality of propositions or sets by which they are reliable. Carnap suggests that this logical type is found in inductive logic and methodology of science, and is the view on this problem adopted by the classical authors. In its second meaning, probability is viewed empirically as some measure of objective predictability which is verifiable, even with difficulty, through observations. This type has its place in mathematical statistics and its applications, and is used in this sense by many contemporary authors.

It is readily granted that a variety of procedures is possible in inductive inference, and that many of these procedures may appear, or may be incompatible. In this monograph, Carnap offers the view that the system of possible inductive methods is a continuum, and he aims to arrange all possible inductive methods into a system so that the nature of any particular method determines its place in the system. The procedure followed is to compare various inductive methods with regard to their success in various possible universes, thus aiming to get the optimum method in any given possible universe. A reader unfamiliar with the techniques and procedure of mathematical logic will find some difficulty in following the proof of Carnap's theory, for it is principally done through symbolic construction.

Carnap has long labored in the field of probability and inductive logic; and, with the publication of his complete researches in this field, will have entrenched for himself a firm and authoritative position in the realm of logical analysis. But as is pointed out in the reviews referred to above, the whole field of induction logic, as well as Carnap's views on these matters, have not at all been closed. More logical analysis and refinement, as well as metaphysical consideration and reflection, seem to be needed in order to solve this apparently simple but complex problem: granted that there is no

absolutely certain method of induction, can we determine, from the continuum of inductive methods, which will be the best and most perfect procedure that should be followed?

Religion in 20th Century America. By HERBERT W. SCHNEIDER. Cambridge: Harvard University Press, 1952. Pp. 254 with index. \$4.25.

This is the third volume of an important series sponsored by the Library of Congress, under the general editorship of R. H. Gabriel, on American civilization at the mid-century. Its author is Professor of Philosophy and Religion at Columbia. In a foreword he states his purpose: "The past 50 years have so transformed our habits, ideas and institutions that it is peculiarly appropriate and important for us to recall the changes we have endured and to explain as best we can. This sketch of our religious revolution cannot go far into the problems of explanation. . . ." (p. v) This is certainly a difficult purpose to attain, given the tremendous variety in the religious life of America; nevertheless, the author has been eminently successful in presenting the facts, though everyone will likely disagree with one or another of his explanations.

The success of the work is due in a large measure to the orderly presentation of the facts, starting from the more external features of the various religious groups and ending with the internal. The first chapter "Religion in a Revolutionary Age" is a preliminary survey of the field, intended to establish the fact that changes have taken place. There follow chapters on: "Institutional Reconstruction in Religion"; "Moral Reconstruction in Religion"; "Intellectual Reconstruction in Religion"; "Trends in Public Worship and Religious Art"; "Varieties of Religious Experience since William James."

In his concluding remarks Mr. Schneider states: "This has been primarily a narrative, not a judgment." (p. 206) Quite true, yet the author has managed to indicate his judgment in many ways; discussing a group of religions under the heading "Varieties of Stubborn Religions" is one way he does it.

The Catholic Church is allotted adequate space in this survey. Most of the facts are accurate enough, but not all the explanations. Speaking of the observance of Sunday among Americans, he adds: "Even among Catholics, who in Europe made less of the Sabbath, this kind of observance soon became customary." (p. 7) The author seems to forget that Ireland and Germany belong to Europe.

The author gives a sympathetic presentation to all those accidental changes in Catholic life that are more or less paralleled in other religious bodies—such as social action, the liturgical revival, etc. The closer he gets to the essentials, the more critical he becomes.

One remark is quite uncalled for. Recalling a sermon he heard delivered by an Episcopalian to a group of children, he relates that: "He explained that the Ascension is a very important feast of the ecclesiastical calendar and concluded by saying, 'Children, the lesson which the Ascension teaches us is that there is always room at the top.' No doubt it was such modernism which the Pope had in mind when he condemned it. But the popes are not in a much stronger position when they explain that it is important that the body of the Virgin should be with her soul in the heavenly presence of God, while leaving the idea of 'bodies in heaven' a complete mystery." (p. 158) To what sort of Christian is "bodies in heaven" a *complete* mystery? Has the author not read St. Paul recently? "But if there is no resurrection of the dead, neither has Christ risen; and if Christ is not risen, vain then is our preaching, vain too is your faith." (I Cor. 14: 13) Or the wonderful passage in Romans, where he refers to the eager longing of all creation, and adds: "And not only it, but we ourselves also who have the first-fruits of the Spirit—we ourselves groan within ourselves, waiting the adoption as sons, *the redemption of our body*." (8: 23) Is it, then, a complete mystery to declare that the Mother of Christ has attained this hope already, the redemption of her body, the anticipated resurrection?

Despite these strictures, we wish to recommend this volume. It contains much information about phases of religious life, especially among Protestants that Catholics would find difficult to obtain elsewhere. Certainly while reading it we will be unable to keep the words of Isaiah out of our minds: "Strayed sheep, each following his own path." (53: 6)

Society and Sanity. By F. J. SHEED. New York: Sheed & Ward, 1952. Pp. 274 with index. \$3.00.

The central theme of this companion-volume to Mr. Sheed's *Theology and Sanity* is quite simple. In fact, it is so simple that readers may at first glance put down the book as a laboring of the obvious. However, as the author points out, "our generation has acquired an extraordinary skill in muddying the obvious." Certainly a clarification of something obvious in itself, but obscure to many, is no small thing when the obvious thing is an ultimate of crucial importance to man and society. An ultimate principle of crucial importance is the theme, obvious in itself, but obscure to many which Mr. Sheed has chosen for his clarification, namely, this: an operable human society must be based on the reality of human nature.

Mr. Sheed first devotes himself to a study of human nature and human operation: Man Essential and Man Existential. Three ideas about man are stressed in the section of Man Essential: the image of God, the immortal spirit, redemption by Christ. These ideas are seen to be the dominant elements of the fundamental concept of our civilization. From these elements

flow man's freedom of activity, his permanence in being and his destination to a union with Infinite Good. Although something of man's condition could have been attained by self-analysis, merely rational evidence has suffered inevitable misinterpretation and men without faith have ended with distorted images of themselves. The Christian alone, by listening to God, accepts all the evidence and knows that man is a rational creature composed of matter and spirit with an eternal destiny. In the section on Man Existential the definition of man is unfolded to reveal his activity of knowing and loving. The fact that a wounded nature has its effects on these operations is wisely emphasized. The fact is not without importance for the builders of society, for, as the author states, (p. 78) both the material and the engineers of society are defective. However, the total view of man's nature is not all on the dark side; for instance, it corrects the fallacy of conceiving law in terms of restriction and substitutes a happier outlook on law as an enlargement of freedom through free cooperation with the will of God.

The second portion of the book considers the institutions of marriage and the family in the same light, that of the reality of the subject which composes them. The explanation of sex in relation to marriage is in keeping with the dignity of human nature, since it restores a strong natural urge to its proper setting which is the union of personalities. Since the author's purpose is to treat principles of solution rather than actual solutions, he devotes a lengthy consideration to the natural and sacramental character of marriage. However, there is likewise a concrete look at marriage itself with self-giving, the fruit of love sounded as the keynote to successful union.

The final part of the book discusses the necessity for the state and its nature as something consequent upon rather than a cause of the social fact. In the study of the relation of the governed to the rulers, emphasis is placed upon the Western democracies. It is inevitable in this section as in the previous section that principles point to solutions, and that some solutions involve criticisms of the existing order of things. However, these criticisms do not detract but rather add inasmuch as they clearly demonstrate the necessity for Christian morality in a state founded upon the Christian concept of man.

The analysis is conducted in Mr. Sheed's vigorously clear and eminently readable style. In this worthwhile discussion of a Christian social order based on a Christian idea of man is a worthy companion to the likewise precise but non-technical *Theology and Sanity*.

De Prudentia. By PETRUS LUMBRERAS, O.P. Madrid: Ediciones Studium de Cultura, 1952. Pp. 131.

This is the ninth in a series of short commentaries on various treatises of the second part of the *Summa* presented by Father Lumbreras as guides to a more profound study of the treatises themselves. As in his other com-

mentaries the author by the use of outlines and brief explanations offers a lucid and direct introduction to the text itself, an introduction which should prove of great utility to the students. Since brevity and clarity are the objectives throughout the work, all minute discussion is avoided. However, one might wish that there were a more thorough discussion of the relations of conscience with prudence. Father Lumbreras himself says that a right conscience is the judgment of prudence and favors the moral system of Equiprobabilism over Probabilism, without, however, entering into a full discussion. He does quote Father Thomas Deman's article on Probabilism from the *Dictionnaire de Théologie Catholique*; readers who wish a more profound discussion of these problems may be referred to the same Father Deman's commentary on Prudence in the editions of *La Revue des Jeunes*. These omissions, however, in view of the purpose of the work, do not at all detract from its value as a clear, solid and direct exposition of the teachings of the Angelic Doctor.

Geschichte der Philosophie, II Teil. By JOHANNES HIRSCHBERGER. Freiburg: Herder, 1952. Paper, 26 DM. Bound, 29.50 DM.

This is the second half of a two volume history of philosophy. The first volume, published in 1949, covered the ancient and medieval periods; the present volume traces the development of philosophical thought from the Renaissance to the contemporary period. A clear and readable exposition is given of the characteristic and essential thought of each philosopher, but the author is not content with a mere chronicle. He attempts, and on the whole succeeds rather well, to show the real history of thought, that is, a certain pattern of continuity between the various schools and systems.

The first and larger section of this second volume is devoted to the philosophy of the Renaissance down to Hegel. Of special interest to scholastic philosophers will be the short but substantial exposition on the revival of scholastic philosophy and its relations with Descartes and the German philosophers. The second and much smaller section of this second volume is given over to a discussion of contemporary philosophy. As in the first section, the philosophers are classified in various schools of thought.

While one might expect a German work to place special emphasis on German philosophers, there is likewise some disproportion in the space given to the scholastic revivals. There is one paragraph about neo-Aristotelianism and neo-scholasticism and one other on Catholic philosophers in the entire second section. The list of Catholic philosophers is not only brief; it is incomplete. However, these omissions do not detract from a well-written history of general philosophy.

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